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CONTENTS:

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Contents:

ARTICLES: Page

REVIEWS:

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The Method of Social Sciences.

By

Vinding Kruse.

Chapter I.

The uncertainty of the social sciences.

The basic problem of ethics.

In our day science exercises the greatest influence on the life of the community. The part played by religion as a spiritual power in the Middle Ages is now being taken over by science. The enormous progress made by the natural sciences during the nineteenth and twentieth centuries has revolutionized the life of man, has increased the production of material benefits to a degree not formerly dreamed of, and has developed the means of intercourse and communication, bringing the most distant parts of the world into close connection with one another, creating an intercourse between people and a reciprocal influence which no one ever thought possible. It is no wonder, therefore, that the greatest respect for science, especially natural science, has spread among the masses. The respect which the masses in older times felt for religion is now in an increasing degree being transferred to science. This is almost the only factor to-day inspiring respect with the masses of the people.

The attitude of the intellectual élite, of scientists, to the problems of the day will therefore exercise a radical and fatal influence upon the masses. However, in order that the élite may exercise its influence in a certain province, scientific investigation

in this province must have arrived at objectively certain and reliable results. But here we find, unfortunately, that social science still remains at a most imperfect stage and, contrary to natural science, has not yet arrived at objectively definite conclusions; deep disagreement and violent controversies on the fundamental social and political problems prevail. The ultimate cause of this state of things is to be found in the conflict and doubt existing on the fundamental questions of ethics, on morals and justice.

The intellectual élite has not succeeded in arriving at objective results in the great problems of life, morals and justice; the élite disagree among themselves whether it is possible to set up valid rules of morals and justice, i. e. basic rules for the conduct of man — then it is no wonder that the masses of the people feel uncertain and do not know how to lead their lives. Ethics and jurisprudence have not yet attained to the rank of sciences able to guide mankind in the same way as natural science; neither ethics, jurisprudence nor other social sciences have found any objective scientific method able to render definite, reliable rules or norms for human conduct. The prevalent view in sociology, political economy and philosophy is that the rules of morals and justice cannot be scientifically proved, that these rules are devoid of scientific sense and are exclusively based upon indvidual subjective sentiments. The consequence of this must be that you may live your life as you please. When the ruling opinion of the élite, of science, caters to such a philosophic view, it is no wonder that the masses in modern times tend to consider morals and justice as antiquated mediaeval notions; religion and other forms of mysticism may still cling to such notions, but »modern» man may rid himself of them and feel superior to them. Gradually the free uncumbered enjoyment of life has become the order of the day among the masses. Also ordinary modern fiction is doing its part towards dissolving all moral rules. In this connection and in what follows, words such as »dissolution», »unscrupulous», »ruthless», »without regard or consideration» are used in an objective, merely descrip-

tive sense, not in the sense of a moral verdict; we have no right to pronounce verdicts before they have been proved valid.

Religion and the moral rules upheld by religion have lost their influence upon great numbers of people, and the consequence of the negative attitude to morals and justice taken up by the scientific élite is that the masses largely indulge in an unimpeded conduct of life, with no consideration whatever of others. This is the case, firstly, in sexual relations, where free relationships, often of a most transitory nature, have lately spread enormously, generally with a complete disregard of the consequences, especially for the woman (children born out of wedlock and all that this entails from a social point of view). Secondly, in commercial life, wherever ruthless competition may be profitable. Any experienced observer among doctors, lawyers and teachers must see that during the last generations, under the influence of the prevailing negative attitude to all moral values on the part of leading people, a considerable looseness — particularly among the young — has spread in sexual and economic relations.

There is apparently no reason whatever for showing consideration to your neighbour in your conduct or enjoyment of life — in *sexual* relations to the woman, who always suffers most from a disordered life, in *business* relations to your competitor — because showing consideration for your neighbour in sexual, economic or other relations is nothing but an expression of the basic moral rules; and, according to the prevailing opinion in scientific thought, these cannot be scientifically proved, but are rooted in mediaeval, mystical conceptions inoculated by religion. Hence it is clear also how present day mentality in the province of *politics* has been able to prepare the soil for such a policy as Nazism, which, uncurbed by any conceptions of morals and justice, allowed a superman mentality to expand itself ruthlessly, inflicting unheard suffering and wrongs on individuals of different opinion, on other races and peoples, murdering and torturing in a manner unparalleled in history. Why should you show regard for others, why should you not torture or murder

your neighbour, if all such charity, all such impediments to a grand, free life expansion in your own interests have no grounds in science, but are rooted only in antiquated mystic conceptions called »morals» and »justice», now upheld only by such an unscientific institution as the Christian religion.

In this as in all other regions we must think scientifically and penetrate to the root of the matter in order to realize the whole scope of the problem, we must not content ourselves with half-measures or draw back from the consequences. If the prevailing view in present-day sociology, political economy and philosophy be right, then all moral education of the young at school and at home may as well cease, all judging of indviduals, public or private, all criticism of social institutions and private societies must cease, all law-courts and prisons must put a stop to their activities and all legislation be terminated —: for people of our day naturally cannot allow themselves to inculcate in children, young people, lawbreakers and others judgments or norms which are not founded in science. Some of the adherents of this philosophy are inconsistent enough to take comfort in the thought that these purely theoretical scientific investigations and their negative results will have no influence upon people's lives, that people will still go on judging themselves and others, educating children and convicting offenders.

But this is a delusion. At the present time when such a great and wide-spread respect for science exists even among simple people, it will soon become clear to them that when science itself throws up the game where all moral and judicial rules are concerned, that these have no foundation in science, then there can be no restrictions on the conduct of life; all impediments in the form of moral rules and laws etc. should be set aside as soon as possible and abolished with the least possible delay.

In times like the present when a world-wide fight for power has raged and is still raging without any kind of moral or judicial curb, no one should delude himself that it will be of no consequence if science maintains that morals and justice cannot

be scientifically confirmed. If science — the only imaginable counsel to which mankind may yet lend an ear — cannot prove that these are values, we shall have to face a future where the culture of mankind will be destroyed in a war of all against all. At the same time mankind is threatened by dissolution from within, a corruption of the individual. Such expressions as »culture», »dissolution», »looseness» I take, as mentioned above, in a descriptive sense, without any evaluating connotation. If no scientific proof can be given of the value of culture — also art is based upon evaluation — there is no reason to maintain it. If our culture is brought to a downfall through future world-wars and mankind returns to the primitive stage of the Neanderthal man, we shall objectively refrain from any »evaluation» of such a »development».

The ruling philosophy should be consistent in its way of thinking, and it must realize that it is up against an alternative: *either* the ruling point of view is right in considering all moral and legal judgments non-scientific, logically absurd expressions of sentiment, and consequently morals and justice have no scientific basis; in this case the inevitable consequence must be that all moral education of children and young people at school and at home, punishing criminals, criticizing social institutions and public and private individuals must be given up; *or* there must be something wrong, something scientifically untenable, a scientific methodological delusion in this trend of thought.

The prevalent point of view, the ethical negativism or value-nihilism must liberate itself from all inconsistent and vague modes of thought, cut loose from the last remnants of unconscious, habitual moral beliefs, and finally divest itself of the delusion that it is of no consequence for the future attitude and destiny of the masses if science maintains that morals and justice have no scientific foundation. Of course, this should not be taken into consideration at all by science, if the prevailing value-nihilism is scientifically tenable. No religion, no moral lay movements, no mystic moral beliefs or illusions must ever be

allowed to interfere or to falsify the results of science. Therefore, the only question is whether ethical negativism or nihilism is *scientifically tenable*, and we shall in the following attempt to answer this question in accordance with purely scientific methods. The problem is: Is it possible to give scientific grounds for ethics and jurisprudence as guiding and directing factors for the conduct of mankind, its actions and whole way of living? Is it possible to give rational grounds for the norms of morals and justice, or must they be dismissed as being scientifically untenable?

First we shall give an account of ethical nihilism and its present position.

Chapter II.

Ethical nihilism.

Among ethical nihilists only a few count consistency as one of their strong points. This applies to many both older and younger adherents of this trend of thought. As a matter of principle, they dismiss all moral evaluation, but often, perhaps unconsciously, they themselves cannot help giving evaluating comments.

The penetration of ethical nihilism is strongly felt in sociology, especially in French and English sociology. *Comte* held that the last stage attained by all sciences must be positivism as opposed to the mystical speculation of older times, i. e. a building up of science based solely upon facts, observation of reality and its cause-effect-relations. It is a matter of course that this is valid not only for natural science, but also for the new science, sociology. Accordingly all religious and ethical evaluations should be kept apart from sociology. However Comte himself ultimately arrived at a belief in the progress of humanity, a mystic religion of humanity. *Durkheim* maintains that sociology must be based upon empirical observation of reality and its causality, free from all preconceived opinions. In his work on the method of sociology (Les règles de la méthode sociologique) he states that

the special objects of sociology are the order of law prevailing in a society, common practice, existing institutions and organizations etc.; he asserts that these phenomena have an objective existence independent of the single individual, that these social phenomena must be observed qua things, and that all political, religious and moral conceptions must be kept apart from such observation. However, later on in the same work he states that the task of sociology should not consist solely in observing and describing the phenomena, because in this case science would lose all practical significance; an objective criterion must be found in connection with the phenomena, a criterion that opens a scientific possibility of discriminating between normal and abnormal phenomena, between health and illness, and he thinks that the notion of perfect adjustment is a criterion of health, thus assuming the expediency of nature. But in this way we have really arrived at an ethical evaluation of the social phenomena; in another place Durkheim employs a »conscience publique» for judging certain phenomena. *Levy-Bruhl* probably is the most consistent of all in maintaining that sociology only has to *describe* the moral and juridical phenomena, i. e. how they are, but no grounds can be given for moral or juridical rules, that is rules stating that one ought to act in a certain manner, see especially his essay: La morale et la science des moeurs. On the whole, modern French sociologists emphasize observation and description of the social phenomena and their causal conformity as being the method of sociology, but they themselves cannot always avoid evaluation. *McDougall* states (in An introduction to social psychology) that a strictly objective psychological observation must form the basis of the social sciences. He gives an account of how volition, acting on the side of the weaker, more ideal motives, enable these to triumph over the simpler, more primitive and stronger motives — »*the will* exerts itself on the side of the weaker motive and enables it to triumph over its stronger antagonists». He also accounts for the harmonious system, where self-consciousness or the self-regarding sentiment is the chief element, and where an ideal

of conduct is developed called a firm character. Further on he mentions »the advance to the higher plane of social conduct», maintaining that the main thing for the advancement of society is a development of the faculties of self-control and law-abidance, also that the instinct of rivalry is the driving power in many of the human endeavours most important to culture, such as art, science etc. Imitation is also a dominant factor in progress. It will be seen that, although his work takes the form of description, McDougall operates with various conceptions of value. According to a consistent value-nihilism, there can be no question of »higher» and »lower» planes of development.

A new epistemological theory, Logical Positivism or Empiricism, also called the Vienna-school, upholds a consistent attitude to the problems of value. This school was initiated by *Moritz Schlick* in 1928, and counts among its adherents *Carnap*, *Neurath*, *Frank*, in England may be mentioned *Ayer* and in the Scandinavian countries *Eino Kaila* and *Jørgen Jørgensen*. The purely epistemological views of this school were clearly defined at, and to some extent even governed the international Congress for the Unity of Science in 1936, see the report: Das Kausalproblem, Copenhagen, 1937. Logical Positivism holds that every assertion can in principle be verified through sense perception. An assertion must be either true or false according to whether it can be so verified or not; all questions on subjects which cannot be the object of verification through sense perception are absurd, are sham problems; and any pronouncement which cannot be the object of such experiential proof is meaningless. *Spinoza's* doctrine of an all-substance, or two substances, one material and one spiritual, *Leibniz'* monad theory, *Hegel's* system etc. are absurd; all metaphysical problems are sham problems, because it is impossible to verify them by sense experience. A thorough analysis of the language is needed, because we often unconsciously use words which, when thoroughly examined, are without meaning or lead on to problems which are but sham problems.

It is evident that this theory of Logical Positivism or Empiricism is by no means new. It represents a development of the

English critical epistemology, of the opinions set forth by *Locke* and *Hume.* After the investigations of these philosophers we should have been spared all further metaphysical dissertations and problems. Let us keep in mind the annihilating criticism by Locke and Hume on the theory of substance and all with this theory associated metaphysical thought-constructions. In the 19th century European philosophy reverted to this unverifiable form of metaphysics with *Fichte, Hegel, Schelling* and others. This was because *Kant* built up an epistemological system which certainly also was meant as a criticism of the metaphysical systems — but on account of Kant's own thought-construction being quite unprovable it gave the above-mentioned philosophers of the romantic period occasion to indulge in the airiest metaphysics.

There will undoubtedly be general agreement on the aspects of Logical Positivism so far referred to, as this trend of thought is but an affirmation and a further development of empirical critical epistemology. In modern science there is no possibility for a revival of the metaphysical systems as was the case at the beginning of the 19th century. The spirit of these systems is absolutely alien to empirical science of to-day. Everyone will agree with Locke and Hume and Logical Positivism of to-day that no assertion can be acknowledged if it cannot be verified by experience. However, we must further investigate what is meant by the expression: verification through experience.

In order to be characterized as either true or false by Logical Positivism, an assertion must state that something in accordance with experience *is* so or so — verification by sense perception assuring that the fact concerned either is as stated by the assertion, or not. Consequently, any assertion which does not state that something *is,* but that something »*ought to be*» or »*must be*», that one ought to or must act in a certain way, is meaningless because it cannot be verified by sense perception. Ethical or juridical judgments of value ar but subjective expressions of sentiment devoid of scientific sense.

In Scandinavia, long before Logical Positivism had appeared, the Swedish philosopher *Axel Hägerström* and his school (the

Uppsala school) have put forward the same theory on ethical and juridical judgments of value. Hägerström stated as early as 1917 (in his treatise: Till frågan om den objektiva rättens begrepp — On the question of the objective notion of justice) that ethical basic notions such as value, right and duty have no objective reality but are solely spontaneous expressions of sentiment without logical sense. The aim of all science is to prove that something *is*. Pronouncements to the effect that something ought to be or must be are thus scientifically meaningless. According to Hägerström, the notions of right and duty are imaginary concepts, probably originating in primitive ideas of justice. However, the same thing happened to adherents of Hägerström's theory as to adherents of similar value-nihilistic views in other countries: Although they dismiss all ethical valuations, notions of value, right and duty, yet when further exposing upon their opinions, they cannot avoid evaluations, they have to take recourse to them, even if they do so unconsciously. This is also to a certain degree true of Hägerström's talented adherents, *Lundstedt* and *Olivecrona*. Also in present-day *political economy*, where the value-nihilistic theory is equally as dominating as in sociology, it proves impossible to do without ethical judgments. This also applies to the Swedish political economist *Gunnar Myrdal*, see his interesting work: Vetenskap och Politik i Nationalekonomien (Science and politics in political economy). On Hägerström and his school and Myrdal's opinions see further my book: Erkendelse og Vurdering (Cognition and Evaluation), 1942, p. 465—70, 516—20.

Before the appearance of Logical Positivism, the Danish philosopher *Herbert Iversen* also maintained ethical nihilism in a thoroughly consistent manner in accordance with his general epistemological point of view, see: Erkendelse og Vurdering p. 95—97, 462—65.

In Nordic sociology, *Westermarck*, *Geiger* and *Ranulf* are adherents of ethical nihilism. A modern work of special interest on the method of sociology is Ranulf's book: Socialvidenskabelig Metodelære (Sociological methodology), 1946. Ranulf's funda-

mental principle seems to be that the method of sociology must be purely descriptive, i. e. consist in a factual description and account of social phenomena and their cause-effect-relations, and he sharply criticizes sociologists who put forward general assertions without having sufficient verification through experience (p. 17—20, 130 seq.). Confronted with an epistemological scepticism as to the unreliability of human observation, he wants to find an empirical criterion of truth, and he finds it in the remarkable technical use of natural science (p. 3). But »technics» means applied natural sciences, and these are all based upon evaluations. Ranulf continues: »The success of sociological theories is more often due to their value for edification or propaganda than to their potential technical value, (p. 34, cf. p. 32—33). He seems to consider this last idea an empirical criterion of truth, and we must therefore ask: what is here meant by »potential technical value»? If it is to be understood in the same way as technical value in applied natural science, then we are deep in questions of evaluation as to which solutions may be »useful» or »expedient» for humanity. In another essay: Moralen og Samfundet (Morals and Society) he first states clearly: »In principle science can do only one thing: prove what *is*, and any deduction from what *is* to what *ought to be* is impossible», (p. 22, see also p. 92—93 where he denies the possibility of giving scientific grounds for morals, cf. p. 94—95, 99—100). But on p. 103 (cf. p. 112—13) he suddenly states that it is always »desirable for society to protect itself as effectively as possible against crimes like murder, theft and violation!» We may well ask Why? Murder, theft, violation etc. are social facts, which sociology must describe — but it must limit itself to describing them. Judgments as to the »desirability» or »undesirability» of these acts are ethical evaluations; and, according to Ranulf's own point of view, sociology must keep away from them, because such evaluations lie outside the scope of science —: science is restricted to ascertaining and describing what *is*, not what *ought to be*. *Th. Geiger* is consistent in his value-nihilism and maintains that the inevitable consequence to

science is that all evalutions must be dissolved, and that theoretic value-nihilism must pass into practical value-nihilism; he rightly criticizes some of Hägerström's followers for inconsistently maintaining a purely *theoretical* value-nihilism, that this nihilism should not have the practical consequence of abolishing all evaluations in life, see Geiger's treatise: Debat med Uppsala om Moral og Ret (Debate with Uppsala on morals and justice, 1946). One of Hägerström's adherents, *Alf Ross*, attempts to maintain the following: There is a difference whether (1) an assertion is false, or (2) devoid of theoretical meaning and therefore can be neither true nor false; as ethical evaluations do not belong to group (1) but to group (2), being alogical expressions of sentiment and volition, irrational statements outside all logical criteria, there is no reason to stop practical evaluation, see Alf Ross: Juristen, 1946, p. 262—65, p. 322—23. This is a scientifically untenable standpoint. The essence of ethical nihilism is *that* all evaluations are alogical, irrational, devoid of scientific sense, because scientific statements deal only with what *is* or *is not*, not with what *ought to be* or *must be*; and *that* statements of evaluation *have no scientific basis*, any more than the sentiment or volition they express. However, if ethical and juridical assertions or evaluations have no scientific basis, it naturally follows that we cannot — as these assertions do — force people to definite actions or omissions or try to guide them in this respect. Practical value-nihilism is thus a scienticifally inevitable consequence of theoretic value-nihilism.

On the other hand, *Geiger* is not right in his criticism of Hägerström. In the above mentioned work he aims to show that Hägerström really has based his opinion of the relationship between power and justice upon objectively valid, higher principles of justice. Hägerström is always consistently descriptive, also in this case, dismissing all ethical and juridical principles of evaluation as scientifically untenable. However, in his sociological description of the origin and further development of constitutions, he naturally takes the psychological factors into account, especially a certain feeling of justice in the people, which

often leads to revolutions; but it cannot be inferred from this that he recognizes such a feeling of justice as objectively valid, see *Karl Olivecrona's* treatise: Viljan bakom rätten (The will behind justice) in Statsvidenskabeligt Tidsskrift p. 1—32, 1947.

On the method of sociology see further in Scandinavian literature *Davidsohn*: Eksakt Sociologi, 1923. On Durkheim see *Chr. Petersen's* treatise: Emile Durkheim, en historisk-kritisk Studie, 1944, on Durkheim's ethical evaluations see this work p. 219. On Logical Positivism see also in English literature treatise by Granville L. William in The Law Quarterly Review, 1946, p. 387—405.

Chapter III.

Description. Experiment.

From the above it will be clear that all followers of ethical nihilism assume that science consists solely in descriptions of what *is*, and therefore all assertions may be proved to be either true or false, i. e. either they tally or they do not tally with what according to our experience *is, exists* [1]. This definition of science agrees with the *traditional conception* and with the *popular idea of* what *science* is. If this definition of science is correct, all judgments pronouncing that something ought to be or must be may rightly be considered unscientific.

The problem is then: Is this traditional conception and definition of science correct?

First we must examine what in this connection is meant by the expression »description» of what is, »descriptive» science.

I.

Description.

Descriptive science does not limit itself to a number of isolated observations of single phenomena, as for instance: this animal is

[1] Observation or experience naturally includes, not only sense perception, observation of external phenomena, but also observation of the inner phenomena, psychological observation. Psychology and sociology, factual description of psychical and psycho-social phenomena are also descriptive sciences.

an ungulate this flower is four-stamened, etc., but it attempts to show similarities and differences between the isolated observations and so to create general concepts (as for instance the general concepts: mammal, organic being, element etc.); further it tries to establish the conformity of the laws of nature or the causal relations between phenomena in space and time. Modern science is not limited — as was science in older times at a more primitive stage — to being *descriptive* in a narrow sense of the word, but it attempts also to *explain* the phenomena in their cause-effect-relations (*explicative*). Let us here keep in mind the difference between the old, merely narrative way of writing history, and modern historic research, which tries to show the course of events as a coherent chain of causes and effects (cf. already in antiquity the difference between Herodotus and Thucydides).

Taken as a whole, what *is*, or *reality*, must in my opinion in accordance with modern descriptive science be understood as: *all our sense perceptions and psychological observations in their differences and similarities and in their lawbound coherences in time and space under the greatest possible correlation* [1].

Modern descriptive social sciences such as sociology, political economy and jurisprudence also try to give such a description and undertake a more exact research of the phenomena in causal relations. However, as the psychic and psycho-social phenomena are much more complex and involved than the external physical phenomena, it is more difficult to unravel the psychical, and still harder to explain the psycho-social phenomena. That is the reason why the social sciences still remain at an imperfect stage, and it is very difficult to express definite opinions on the development of social conditions. However, most social and political doctrines are guilty on this point, whether they are called liberalism, socialism, communism etc.

[1] See my treatise: Videnskabens Begrundelse, 1943, p. 31 seq.

A. *Political economy and jurisprudence.*

The juridical and economic cause-effect-relations.

On account of the extraordinary complexity of the economic social conditions, the most thorough researchers in political economy repeatedly emphasize the great difficulty in setting up definite theories on the economic cause-effect-relations. Such theories have in the past been advanced and are still being advanced; attempts have been made to express them in mathematical formulas and to illustrate them with graphs as if we were dealing with simple physical causality. But the political-economic theories are always changing; no sooner has a certain theory been advanced on some economic cause-effect question, than a new theory arises asserting that the former theory has overlooked certain cause-effect relations, and thus the carefully calculated formulas and diagrams fall to earth. Take, for instance, the problem of the relation between savings and invested capital and the ensuing theories on interest on capital as advanced by political economists. One theory, the credit-theory, gets hold of one set of causes and effects; another, the liquidity-theory, points to different cause-effect relations, and so on. One opinion maintains, for instance, that a certain connection exists between the interest percentage and savings, and between the interest percentage and the urge to invest; and formulas and diagrams are constructed accordingly. Then other political economists call attention to different factors, other cause-effect relations, making the whole problem much more complicated than assumed before. Psychological factors are particularly difficult to account for; for instance, a person wishing to invest may not necessarily have to deprive himself in order to do so, to invest is not always a sacrifice, there are people so rich that saving is no sacrifice; in this case the usual psychological motives are wanting, and so forth. *Maynard Keynes* maintains, and to the point, that a large complex of factors exists determining how people are going to invest their money, and determining the

supply and demand of capital, a number of complex psychological and economic motives (such as motives of business and speculation, motives of prudence and insurance).[1] The most thorough modern political economists have realized that it is impossible to set up definite theories on interest, savings, investments etc. We find the same complexity of psychological and economic factors when considering cause and effect in most social economic fields. Many mathematical formulas and diagrams in political economy can be spared and replaced by the simple acknowledgment that we know nothing definite about these things. Furthermore, the theories with their formulas and graphs are often based on the constancy of certain assumptions, e. g. in theories on interest full employment is assumed, full utilization of the accumulations of real capital (raw materials, machinery etc.). Such assumptions are unreal, or are in accordance with reality only at rare periods. Finally there is added a factor which in our time is growing stronger and more effective every day: *the interference and control of the State*, the group of psychical causes, which in another place I have shown to be the ruling power of the order of law in measuring and evaluating the development of economic life, with the result that the airy construction of formulas and diagrams collapses, often in the practically seen most important fields of political economy.

Taken as a whole, the economic life of the community is, as I have shown in former publications, not a purely economic organism, but an *economic-juridical* organism affected by the rules of civil law. The simple basic rules of civil law, such as: (1) you must keep your promises and contracts in every particular (D. L. and N. L. 5-1-1 and 2), and (2) you must not appropriate the property of others or destroy it against their will (D. L. and N. L. 6-17-1-5, Criminal Law §§ 276—294), are the foundations of all economic life. If for instance rule

[1] See further on these questions: Laanerenten (Interest on loans), A theoretical and historical investigation of the development of interest in Denmark, 1947, by Nyboe Andersen, Bent Hansen, Sigurd Jensen and Sloth Carlsen.

(1) was not included in the law, our whole economic life would be quite different from what it is now. Right of credit and mortgage would be completely changed, as is clearly shown by experiences from the society of former times when rule (1) was not recognized. Modern political economy (especially the so-called economy-policy) is well aware — contrary to older political economy — that interference on the part of the State in the form of legislation will to a large extent alter the course of economic life. This is however only understood with regard to legislative measures having a noticeable outward effect on the life of the community, such as laws on factory-workers, the so-called social legislation taken as a whole, on customs and taxes etc. What political economy has not realized, however, is that the general rules of civil law, though outwardly inconspicuous, e. g. the above-mentioned rules (1) and (2), are simply the foundation of the whole economic life. Economic life is in all its veins and nerves permeated by these laws, and would be totally different if these basic laws did not govern economic activity in society. Consequently it is not possible to set up *economic »laws«* for cause-effect relations — like natural laws in physics — or to express them in simple mathematical formulas and diagrams, as is done in natural science.[1] However, the decisive influence of legislation upon economic cause-effect relations is not limited to the above mentioned fundamental rules of law. Through the sections of the law dealing with legal registration and preceptive right of mortgage we have equally clear proof of the deep and incisive change effectuated in economic life by these forcible precepts of the law. In my investigations on agrarian law I have proved the same to be the case in this province. History and political economy have so far dealt only with the liberation of the peasants from former legal rules, but have overlooked the preceptive rules of law and

[1] See my investigations pointing out the juridical-economic correlations in Civil Law: Ejendomsretten (right of property) 2nd edition, I, p. 33—39, 45—51, 61—87, also my book: Retslæren (Jurisprudence) p. 65—71, cf. p. 50 seq.

their influence, which have thoroughly transformed agrarian conditions [1].

The relations which I have called the juridical-economic cause-effect relations are apparent, however, not only in the rules of civil law, but also — particularly in modern times — in another field, although according to political economic opinion in general, this field should be absolutely exempted from the rules and principles of law and only submitted to the general development of economic conditions. When political economy was founded by Hume, Adam Smith and others, it meant an attack on the old law-system, the system of guilds and the laws determining the cause-effect relations where prices, wages and production were concerned. It was asserted that these cause-effect relations should run their course free and untrammelled by legal restrictions, determined solely by the natural laws of economy, such as the law of supply and demand etc. The same applied to questions of capital and interest. Gradually political economy succeeded in persuading the statesmen to adopt this liberalistic point of view: that legislation should withdraw from these domains and leave them to their own free development; finally, the whole system of guilds and all laws determining prices and wages, as well as laws on maximum interest were abolished. This meant that the law and all jurisprudence retired from this field, leaving it to its fellow-science, political economy; the result was that jurisprudence during the nineteenth century limited itself to the common rules of civil law and criminal law.

It is well known that cause and effect in the free development of prices and wages took a different course from that predicted by the theory of political economy. On the private initiative of citizens, powerful amalgamations, cartels, trusts, trade unions and employers' associations arose, doing away with the free fluctuation of prices and wages and free production. Presently the remarkable thing happened that, in the name of liberalistic economy, the legislative authorities were now called upon to

[1] See: Ejendomsretten II, p. 783 seq., III, p. 1359 seq. I, p. 282—316.

intervene, intervention by both legislation and law-courts was demanded against these confederations to re-establish liberty, a free and natural condition of things, where only the economic natural law of supply and demand should fix prices and wages. In this way we got the *destructive* legislation against trusts and trade-unions, the anti-trust-law, the laws directed against trade-unions, the intervention of the law-courts to prevent restraint-of-trade agreements, amalgamations etc.

However, experience has shown that this destructive legislation and practice of the law-courts is not satisfactory, and we are now faced with a *constructive* task, the problem of creating a new trust- and trade-unions-legislation, which does not forbid amalgamations but makes use of them for the good of society.

As far as I can see, we are now compelled by the demands of life itself to create an enormous system of laws to regulate the whole of this domain, a quite new order of law with special laws and law-courts — a striking analogy to the old guilds and other institutions. It is thus evident that the economic life of the community cannot do without the extensive system of rules in civil law, nor can it dispense with systematic intervention of legislation to fix rules for prices, wages and production [1] In short, this means that *the law again takes the whole of this province* under its jurisdiction. And the cause-effect relations will here be not only economic, but juridical-economic. Development is guided by rules provided by the law and the law-courts. The fixing of prices, wages and the conditions of production cannot be separated as has hitherto been done in a haphazard manner under a sporadic, fortuitous legislation, mainly based on hazy theories. The cause-effect relations must also in this province be subjected to the systematic control of the law, as is the case with legal registration of real property and mortgage and other provinces under civil law.

This development means as a whole that *jurisprudence again takes possession of this wide field of economic life* which has

[1] See my treatise: Arbejdets og Kapitalens Organisationer (the organizations of work and capital), and my book: Retslæren II, p. 737—838.

hitherto, in the 19th and 20th centuries been handed over to and determined by political economy.

Finally, I should like to emphasize that lately new problems have arisen of the greatest practical significance to modern society, which are independent of *economic* causes and factors, but closely connected with *intellectual* and *spiritual* forces, and which will be of decisive importance to society of the future, transforming its structure and appearance. Jurisprudence as a science will to an ever increasing extent have to govern these problems by its regulations. These domains are concerned, not only with the important problem of spiritual ownership, but also with the enormous question which I have called the *problem of surroundings*, dealing with our towns, buildings, nature and the shaping of these factors in relation to one another — a problem which must often be solved regardless of economic interests [1]. Man does not live by bread alone. This phenomenon — by me called intellectual and spiritual ownership — will be seen to rule future society at least to the same degree as does material ownership. We are here facing an absolutely new development still in an embryo state, at present uncertainly groping its way through a scattered legislation on building, town- and country-planning, preservation of cultural and natural values; but always growing, making its way irresistibly, it calls for directives and systematic lawgiving and regulations. During the hard fight for existence, mainly to obtain satisfaction of material needs, human society has until now been a juridical-economic organism, but it will become a juridical-spiritual organism, demanding a completely new set of laws and this tendency will grow in proportion to the ease with which purely economic needs can be satisfied.

Certain factors of the order of law, of the legal system are to-day by political economy sometimes called »institutional» factors, and they are admitted to cross the merely economic factors. This expression, however, is vague and unsatisfactory, it does not sound the depths of this whole problem. All factors

[1] cf. Ejendomsretten, I. p. 351—387, Retslæren II, p. 912—935.

here are juridical i. e. rules on *what ought to be or must be, how you ought to act or must act*, that is to say *factors of valuation*, factors claiming their right to determine the economic, mental and spiritual development of society. At this point in the investigation we shall merely state these factors, leaving them as unknown X-causes not to be explained by the traditional conceptions of science. Here we shall only state that these according to the prevailing ethical nihilistic theory »irrational» or »alogical» factors are making their appearance in wide sections of social life and qua X-causes are making themselves felt more and more in the social cause-effect relations. They *exist*, they are *present in the reality coherence of social life.* From a traditional scientific viewpoint they must therefore be recognized as being real, as existing, as belonging in reality. But their contents and their intervention in the course of cause and effect are, as seen from a traditional viewpoint, quite inexplicable. We may call these X-phenomena »ought-to-be-phenomena» as distinct from »are-phenomena». Political economy is beginning to recognize the juridical factors, »the institutional system», the »ought-to-be-phenomena» as being really present and intervening in economic cause-effect relations — or disturbing their circles and curves — in the same manner as »are-phenomena». But the ruling theory in political economy will not recognize valuations, ethical, juridical concepts of value, and therefore modern political economy must leave these juridical causes in the reality coherence as inexplicable, irrational X-factors.

In science the most fatal errors have been committed when social theories, overlooking the juridical factors in the causality of real life, have obtained great political influence on the masses. Thus *Karl Marx's* view on society, socialism, is based on a fundamental scientific methodological error, viz.: throughout his description and explanation of the development of economic life he allows only for economic, material causes, completely overlooking the juridical. His general conclusion that society in all countries with the aid of modern technics will undergo a capitalistic development is therefore untrue. The capitalistic

development in English agriculture and English industry and commerce during the 18th and 19th centuries caused Marx to draw the general conclusion that all other countries would undergo a similar capitalistic development. He did not see that capitalistic development in England was dependent on a cause overlooked by him, namely X 1, an order of law allowing full freedom for the amalgamation of enterprises, both landed property and industrial concerns. In another country, Denmark, the condition underlying the development was a quite different order of law, X 2, containing coercive, preceptive laws to prevent amalgamation of landed property; and in Denmark the result was the exact opposite to that in England: the big estates were parcelled out into small farms, effect D. However, it is comprehensible that Marx overlooked these factors, X 1 and X 2; they have been neglected also by all other researchers in the fields of history, political economy and jurisprudence. It is extremely difficult to discover these unknown causes. External observations are limited to material, visible causes and effects, viz: the disappearance of the small concerns, and the enormous growth of the big enterprises, engulfing the smaller, in agriculture and industry alike. The attitude of the law and the law-courts to an economic development might be either negative: omitting to interfere, or positive: intervention and control. In England the attitude of legislation to both agrarian and industrial amalgamation was entirely negative. This passivity is neither seen nor felt by an observer, consequently he does not take it into account. Karl Marx, like Adam Smith and the liberal school as a whole, considered positive active intervention by legislation in economic life as having no real importance. Socialism and liberalism, in spite of their many differences, were agreed that laws make no difference one way or the other, that laws are unable to stop or prevent economic development, that it will make its way, irresistibly, by virtue of inexorable economic natural laws, such as the law of demand and supply, and that a legislator stands powerless against the effects of these natural laws. These predominant theories in

economic science clearly shows in what a difficult situation social science is placed with regard to scientific method. The investigation of the true causes and effects in the course of development of the human society is so much to prevent all causes and effects because they are external observable. But in the domain of social psychology causes like X 1 and X 2 are extremely hard to perceive. In sociology one is apt to follow the method of natural science looking to external, easily observable causes and effects. Particularly one is apt to neglect the negative causal conditions, because they escape external observation. If, like Karl Marx, you see that economic life tends towards amalgamation of enterprises (in the following called X) that this tendency leads to the disappearance of small concerns, to the establishment of large enterprises and capitalism (in the following called S) when legislation leaves business to its own device — then, like Karl Marx, you may arrive at the conclusion that it is only X which leads to S, you will overlook that in reality X + X 1 are the true causes of S, and that X 1 is the negative causal condition of S. There were other countries where the unknown factor, the attitude of legislation, was not negative but positive, as for instance in Denmark, where during the 19th century agrarian legislation intervened and put a stop to the amalgamation of concerns, doubling the big estates. However neither historians or political economists have paid attention to this side of agrarian legislation, they only considered another more easily observable side of it: the freedom granted to economic life, repeal of human bondage, abrogation of village and similar prohibitions of removal. But the prerequisite compulsory legal rules, also introduced by the agrarian legislation, had a less observable effect upon the outside world, laws on parcelling out and allotment of land, laws prohibiting amalgamation of farms and manors, joint ownership of land, inspection of forced sales, etc., all these were kept in the background and their decisive regulating effect on economic life was neither observed nor understood.[1]

[1] See Agrarian Legislation, I. p. 288—295.

In economic life in Denmark too the cause K had its effect: a strong tendency — also in agriculture — to an amalgamation of concerns; but the development took a different direction from that in England, and the reason was that in Denmark X 2 was part of the cause. In England the causes K + X 1 resulted in S, amalgamation of concerns, including the large estates; in Denmark the causes K + X 2 led to D, parcelling out of large estates and prevention of big amalgamations. In both cases the causal relations were not merely economic, but more complicated, i. e. juridical-economic. The Danish *preceptive* [1] agrarian legislation taken as a whole presents — as I have pointed out elsewhere — the best documentary evidence that both liberalism and socialism give an incorrect description of the economic life of the community; it also proves that the factors X, so far neglected, always play a part — either positive or negative — in social cause and effect relations, giving economic social development quite a different tendency from what it would have had if solely economic causes had been determining. From the above it is clear that the order of law, the law and the law-courts, may intervene, affecting the norms and tendencies of economic life and to a large extent determining its development.

In a later chapter these X factors will be further analysed; according to the traditional conceptions of science they are irrational factors; viz. »ought-to-be-causes» in social causality.

B. *Sociology.*

In political economy it has always been difficult to give a precise description of the cause-effect relations — and the same is true of sociology. Development in this science shows that time after time sociologists have come to too hasty general conclusions, applying causal relations observed in certain instances to other instances without sufficient basis for so doing [2].

[1] In the following the expression »*preceptive*» rules of law is used to indicate rules which are compulsory in contractual relations, i. e. the contracting parties cannot set aside these rules by common agreement.

[2] cf. Ranulf's work mentioned p. 130 seq. 141—53.

The strength of modern natural science lies in the fact that, when it is ascertained that cause »a» has effect »b», we may predict that the occurrence of »a» will be followed by »b». In sociology, however, it is extremely difficult to define exactly the causes of the occurrence of a new condition, of a certain effect; we observe, for instance, crises and unemployment, but to predict when future crises and unemployment are likely to occur is almost impossible. These social phenomena and their cause-effect relations are much more complicated than those in natural science, where we are able to predict that a certain metal will melt at a certain degree of heat, the heat and the quality of the metal being the cause, the melting the effect.

When shall we be able to say of social phenomena that when cause »a» occurs, »b» will follow as its effect? Can we make sure that when the social phenomenon »a» in numerous cases has been followed by phenomenon »b», then »a» is the cause of »b»? For instance we have repeatedly seen that crises and unemployment have occurred under a liberalistic form of government, may we then conclude from this that the liberalistic order is the cause of crises and unemployment? Or is this conclusion just as unreliable as Karl Marx's conclusion — criticized above — that a bourgeois, non-socialistic society will always lead to big business, capitalism and amalgamations, and at the same time to the impoverishment of the working classes and social catastrophe?

Many sociologists are of opinion that from induction from the often repeated concurrence of social phenomena, from »b»'s repeatedly observed succession upon »a», we are justified in concluding a causal relation between phenomena, so that we may predict the occurrence of effect »b». *Ranulf* maintains that causality can be demonstrated only through induction, through the regular concurrence of the phenomena, which can be ascertained only through a large number of observations, never by the observation of a single case. (Ranulf: the above mentioned book p. 98 seq., 100, 102). Ranulf has evidently forgotten Stuart Mill's famous methodological error of circular

conclusion. This philosopher wished to prove the causal proposition through a larger number of observations; but when it came to the point, he could only explain the justification of induction by means of the causal proposition.

I see no other way of discriminating frequent coincidence of two phenomena, mere correlation, from a cause-effect relation than by the notion of *change*, i. e. *successive, different conditions occurring in the same object* — see my exposition on this subject in Erkendelse og Vurdering (Cognition and Evaluation) p. 355 seq. Ranulf's objection to this (p. 100) is that it is not clear what is meant by making change — »successive conditions within the same object» — a criterion of causality, because in this case »the whole universe is one object», just as well as »any arbitrarily limited larger or smaller part of it». This objection is not valid. First of all it is based upon an incorrect quotation; my definition of the notion of change is not: »successive conditions within the same object», but »successive, different conditions within the same object». The two limitations in the definition apparent in (1) »different» and (2) »same», clearly indicate causality in contradistinction to mere correlation. When this has been said, when these clearly defined limitations are borne in mind, it is of no importance whatever whether the object is large or small, the whole universe or a limited part of it. What does Ranulf mean by »change» within »the universe as a unity»? In this connection we can only think of events such as an atomic explosion causing the whole universe to vanish. A person experiencing this complete destruction of the universe will undoubtedly in his last moment ask: what is the cause of this? In this case no repetition will take place and there will be no possibility for induction. What we call »change» can only take place within »a larger or smaller part» of the universe, for instance the sun or another celestial body; there is nothing »arbitrary» in this limitation, the parts indicated by the limitation are what we naturally call objects or things; and (1) *different* conditions (2) *succeeding each other in time* in the (3) *same* object, together form the notion of *change*.

Ranulfs objection is irrelevant, if for no other reason, because there is no other criterion of causality, in contradistinction to mere correlation, than the phenomenon stated: *change*. The regularity or frequent coincidence of two phenomena, with which Ranulf operates throughout his exposition as a criterion of causality, can never — even if the uniform cases are ever so numerous — be the true criterion of causality, for in that case the alternations of day and night, of summer and winter etc., which have taken place billions of times, would constitute a cause-effect relation. The phenomenon of change ts therefore the only »clear» and »useful» criterion (cf. Ranulf p. 100) for »determining whether in any given case causality is present» [1].

[1] Ranulf thinks that this involves a self-contradiction (p. 100—102), but there is no contradiction between my two statements, first, that a single case of change may indicate causality (see Erkendelse og Vurdering p. 355), and, second, that the frequency of a certain cause and effect succeeding one another may have a certain significance for research work as an auxilliary means of ascertainment (see p. 335), and this is in concord with other views as expressed by me, see for instance the same work p. 131—132. In my work: Erkendelseslæren og Naturvidenskabens Grundbegreber (Epistemology and the basic concepts of natural science) p. 302 seq. I investigated only the notions of power and cause in relation to the conformity of natural laws, and did not go further into the origin of the latter. A more exact analysis of what is meant by »conformity of the laws of nature» I have given in my later work: Erkendelse og Vurdering (Cognition and Evaluation) as above mentioned. However, Ranulf makes an erroneous inference, when (p. 101—2) he assumes that, by replacing the notions of »power» and »cause» by the notion »conformity», I have admitted that the ultimate criterion of causality »will after all be the regular coincidence of phenomena, to be ascertained only through a large number of observations, and never to be ascertained by observation of one singe case.» (p. 102). Ranulf here confuses conformity of the laws of nature with statistic frequency. Frequency in the successive correlation, however many times repeated, can never in itself indicate causality. Frequency *may* be the expression of such correlation, cf.: place lead near fire and it will melt; but frequency may often *not* be the expression of such correlation, cf. day and night. As I have shown, only the phenomenon of change marks the demarcation between causality or conformity of the laws of nature on the one side and the merely regular or frequent correlation. Ranulf's statements (p. 114—15) in his argumentation against Geiger also show that he confuses causality (or conformity) with statistically frequent

As I have shown, both the phenomenon called cause and the phenomenon called effect are changes, and in order to demonstrate »the cause» of »an effect», we must simply refer the latter change back to the former. What we observe are only a succession of changes in time, and when we say that there is a cause and effect relation between two successive changes, it only means that we have ascertained a law-bound coherence in these changes, called by us cause and effect. There is no need of many repetitions in order to ascertain such conformity between two changes — one isolated case is sufficient. If I only once, by a careless movement of my hand, have cut myself with a knife, or have burnt myself by getting too close to fire, I need no further recurrences; I instantly conclude that the change — the wound in the tissue of my body and the ensuing pain — is caused by the preceding change: the movement of my hand holding the knife, or getting too close to the fire, and that there is a necessary correlation between these two changes. Therefore, in future, when I wish to avoid the latter change, »the effect», the wound, I shall avoid the first change, »the cause», the movement of my hand. In this instance we start by ascertaining a change, we instantly ask: what was the cause? and we persist until we have found another change, a previous change which we inevitably connect with the latter change [1].

correlations, believing that in modern natural science causality is taken as statistically frequent correlations. This is a misunderstanding. In modern natural science we must discriminate between two regions. In one region, the world of macrocosm (the ordinary observable world) causality means law-bound coherence; but in the other, the world of microcosm (the atomic processes) we find only statistically frequent correlations. Causality in the meaning law-bound coherence is in the ordinary physical world what we call laws of nature, e. g. the law of gravitation, the electro-magnetic laws etc. And there are no exceptions here; regularity or statistical frequency are not sufficient here; the *always* present conformity with no exceptions is the criterion here. Ranulf's argumentation against Geiger (p. 114—115) is therefore irrelevant, and Geiger's statement is quite correct. Behind this conformity, this law-bound coherence without exceptions lies the phenomenon of change as the decisive characteristic element.

[1] See Erkendelselæren og Naturvidenskabens Grundbegreber p. 299—318 and Erkendelse og Vurdering p. 112 seq.

Not only in everyday life, but also in science — in natural science as well as in sociology — this will be the right method of ascertaining causality or conformity in two phenomena, viz.: take as your *starting point a change*, and with this as your basis find *preceding changes* in necessary correlation with the change first observed.

In the scrutiny of these preceding changes, the so-called causes, you cannot be too careful. From the above we have seen the hasty and superficial conclusions often arrived at in social science when preceding changes have been defined as the causes of succeeding changes. The same is the case in such instances as the rise of crises, unemployment, amalgamation of concerns and large scale capitalism.

We can illustrate the difficulty of discovering the true coherence in social changes by taking an example from the period after the world war 1914—18, the depression which shook the societies to their foundation in 1921 and the years following. Let us as an example give a picture of the depression as it affected the Danish community, and begin by sketching the most significant feature of the crisis, i. e. the great change in economic conditions, beginning with the general collapse of prices in the early part of 1921. The following has an interest not only for political economy, but also for sociology and jurisprudence, for the method of social sciences as a whole.

In the autumn of 1920 the inflation culminated. The wholesale price level was four times higher than in the period before the war. The decisive factor in the inflation 1918—20 was the increase of wage expenditure per unit produced. During the war we had gradually reached a very high level of wages, beyond what was necessary to cover the rise in prices. From the spring 1918 till the spring 1920 the time-rate of wages increased by 152 %, while the price level rose only by 44 %. If we fix our starting point in 1914 at 100 for both time-rate and retail price, the average time-rate of industrial workers up till 1921 had risen to 379, but the retail-price only to 237.

At the beginning of 1921 the great upheaval took place. The

import price level was halved from 1920 till 1921. A big purchasers' strike occurred, that is to say, businessmen postponed their purchases of raw materials and consumers postponed all purchases not absolutely indispensable, because both businessmen and consumers all over the world counted on being able to buy at cheaper prices later on.

The great fall in prices had an almost paralyzing effect upon production, and the rate of unemployment increased enormously, during 1921, to 19.7 % as against 6.1 % the previous year. Because of the high wages, Danish industry could not compete with the goods imported from abroad.

Many Danish buisnessmen had speculated in a large import of goods to be re-exported to Central Europe, the Baltics and Russia, all these countries being in great need of supplies. But many buisnessmen had overlooked the fact that these countries were not in a position to pay for such an import.

The changes here outlined: the big fall in prices, the stop to industrial production, unemployment, the numerous failures in speculation meant great losses to Danish Business. 1922 and the following years brought a number of serious failures among the Banks; even the biggest Bank in the country, Landmandsbanken, went bankrupt, the total loss amounting to about 400 million Danish crowns (roughly £20,000,000). A number of smaller Banks together had losses amounting to about 300 million crowns. An important fact must be borne in mind when considering conditions in 1921 and the following years: the whole apparatus of production of both industry and agriculture had been seriously deteriorated during the war years, and a reconstruction costing approximately 700 million crowns had become imperative.

This catastrophic change in Danish society, the depression of 1921 and the period following, has been the subject of much pondering and many investigations, all aimed at discovering the causes of the depression. It had involved enormous losses for Danish Business and the Danish State; and great efforts have

been made to investigate whether Business or the State might in time have taken steps to ward off the catastrophe.

Political economists have especially considered the use of monetary technical means, such as *a rise in the rate of discount* and changes in *the rates of foreign exchange*. However, political economists were not agreed on the application of these measures; some economists held that Danmark's Nationalbank as early as 1919 — when Sterling and Dollar exceeded the old gold parity — ought to have raised the discount again and again until a reaction was felt in the foreign exchange. The point was that Danish society during the war years made good business abroad and had outstanding debts amounting to 900 million Danish crowns (£45,000,000); this credit could have been used with greater economy to put a stop to post-war inflation with prices and wages constantly rising. But the inflation continued unaffected until the autumn of 1920. The same economists also hold that a drastic raising of the discount would have done its share to prevent the surplus import in 1920 from running up to such quantities as was actually the case.

Another group of national economists and the leading Bank experts — among them the board of directors of the National Bank — disagreed on this point. It is true, they said, that the rate of discount may be used to put a drag on Business, but in this case no one could predict for how long a period it would have to be kept up in order to bring costs and prices down to normal; it was pointed out that wages could not be expected to fall immediately. All things considered, this opinion was probably right.[1]

Later on, during post-war time, when the question arose whether the rate of exchange of the Danish crown ought to be raised to par or stabilized at a lower level, the national economists were again disagreed, one group maintaining the first point

[1] cf. Nyboe Andersen in his above mentioned essay p. 175—76. Another trait of the depression ought to be mentioned: the rate of bonds dropped in 1920 to 83 compared with 96—97 during the war.

of view, and another the last mentioned (i. e. stabilization at about 65).

The general background for employing monetary technical methods, especially the possibility that society (by raising the rate of discount or by lowering the rate of exchange) may intervene in certain social phenomena in Business, will in economy probably be classed among the so-called »institutional» relations. It is, as above mentioned, often far from clear what is meant by this. In the present connection it must be emphasized that the use of the discount- and exchange- policy is in the last instance dependent upon *the order of law*, in this case the *legislation.* The authority of the Nationalbank to raise or lower the discount, and the State's authority in consultation with the Nationalbank to fix the rate of exchange are based upon laws conveying such authority (see Law on Danmark's Nationalbank, No. 116, of 7th April 1936, cf. Law No. 158 of 29th March 1943, chapter 1.) It seems to me, however that in the lively economic discussions during 1921 and the following years on the causes of the great depression, one thing was overlooked; there might be general disagreement as to the wisdom of introducing the monetary technical measures mentioned — raising the discount and fixing the exchange at a certain point — but, as far as I can see, there can be no doubt that, if the *law* had intervened with a number of other *compulsory, preceptive* regulations, the crisis of 1921 with all its calamities for the Danish community might to a large extent have been avoided.

a. Firstly, already in the nineteenth century, when Banking underwent an important development in Denmark, legislation ought to have intervened, laying down a preceptive regulation obliging all Banks to pay annually a small part of their net income, a pro mille payment, to *a mutual emergency fund* to meet major losses when a Bank was facing bankruptcy. Also in the nineteenth century an effective Bank-inspection should have been established; the preceptive regulations, which were only made law after the disasters of 1921, should have been introduced then, to the effect that: *a Bank* is *only within narrow limitations*

entitled to own or to borrow on its own shares; no engagement must ever exceed a certain minor part of the share capital of the Bank, etc. Such preceptive rules would have hindered several of the malpractices committed by the Landmandsbank in 1916—21 (cf. Law on Banking No. 254 of 25th July 1938, § 12.) If a mutual Banking emergency fund and the preceptive rules mentioned above had been established in the nineteenth century, for instance in 1880, the greater part of the losses incurred by the Banks, amounting to about 700 million crowns, (£35,000,000) during 1922 and the following years might have been avoided or covered by the emergency fund; neither Landmandsbanken nor Discontobanken nor a number of other Banks would then have been forced to liquidate, causing great disaster to society as a whole.

b. Secondly, legislation ought to have intervened also during the war years, already in 1914—15, laying down *preceptive regulations restricting the dividends of companies and demanding that a considerable part of the enormous profits earned by both industrial and shipping companies* during 1914—20 *should be used for consolidating the position* of *the companies and for placing in emergency funds* to be used for a reconstruction of industry and for meeting the losses of the post-war period. As it was, only a few well-managed shipping and industrial companies followed a sensible dividend-policy and set aside savings and reserve funds against periods of slump.

If legislation had intervened energetically by limiting dividends and compelling the companies to consolidate during the years 1914—20, we should have avoided a considerable part of the bankruptcies and reconstructions of companies which ravaged Danish Business like a storm in the years after 1921.

c. Last but not least, we should also have escaped inflation, the catastrophic rocketing of wages and prices during 1914—20, if legislation before this time had taken action to prevent the arbitrary movements of prices and wages; *a special legal authority* should have been established with power to intervene wherever *prices* and *wages* were not fixed in accordance with

free competition but through agreements between organizations such as trusts and cartels, or by collective agreements of trade-unions; such authority should be entitled to fix the prices of goods and workers' wages, with due consideration for ruling economic conditions, including the rate of exchange. During the war-years 1914—18 and some post-war years »The extra-ordinary Commission» made some attempts in this direction, but with poor results.

During the period 1914—20 the government closed its eyes to the fact that companies were paying abnormally high dividends, and it did not intervene energetically against the rising prices; therefore it had no moral right to intervene when the workers went on demanding higher wages. In 1914 we ought to have had a central legal authority, entitled to intervene impartially against trust and cartels as well as against trade unions and employers' associations, fixing prices and wages at reasonable rates, upholding the proper proportions between the wages earned by workers and the prices to be paid for goods by workers and other consumers. In that case the workers could not complain of wages fixed in this way, and the great inflation of 1918—20 might in large measure have been avoided.[1]

Above I have described the depression and its course, emphasizing that the measures appearing under a, b, and c could have prevented, or to a large extent at least limited, the disastrous effects of the depression. The most interesting point sociologically seen, however, is that these measures all of them belong to what I call *negative causal conditions*, and that all of them are *juridical*. The order of law did not interfere by these cogent legal rules — mentioned under a, b, c — and so changes baneful to society occurred, slump and depression.

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[1] cf. Retslæren (Jurisprudence) II p. 737—838. Later on during the serious agrarian crisis of 1931 and the following years the Danish government and parliament also neglected to intervene in a rational manner, by means of practical, forceful laws; in lieu of this a number of demoralizing half-measures were taken at great cost to the State, see my essay: Sanering til Bunds af Landbrugets Gældsforhold (Sanitation of the debts of agriculture) 1934.

However, it is comprehensible that political economy and sociology have not turned their attention to these negative causal conditions, for, in the changes appearing in the course of the depression as a chain of purely economic causes and effects, the above-mentioned juridical factors intervening in the changes as causes *were not present.* They are the unknown factors; according to the usual economic and sociological scientific conception they are irrational X factors. They are ethical, juridical »ought-to-be» phenomena. If they interfere in the social processes of change, as for instance the Danish preceptive agrarian law, they are actually recognized as »are»-phenomena; as causes they alter the course of the social changes in a different direction from what it would have taken if these X causes had not interfered. The same thing would happen if legislation, through the legal rules mentioned above under a, b, and c, were to interfere in Business. However, when the order of law will not intervene through the above mentioned preceptive legal rules, but leaves Business free to grapple with dividends, prices and wages, then social changes will appear, negatively conditioned by the non-intervention of legislation, together with social catastrophes as described above.

At this point of the investigation I have limited myself to pointing out the actual presence or non-presence of these juridical causes in the processes of change, and the social effects derived from their presence or non-presence. Through the instances mentioned of agrarian and commercial legislation I have shown that the course of social changes takes another direction, that quite different changes take place as effects of a previous condition, depending on whether these juridical causes are present or non-present. On the other hand, at this point I shall not attempt a justification of these juridical causes, whether it is beneficial or right that they should be present or not present — because then we should attempt an evaluation, and before that is undertaken, the evaluation itself must be justified. My task so far has been only to demonstrate the factual great importance of the juridical causes and their intervention in social cause-

effect relations, and to show through the errors in social scientific method — as illustrated above — that it is impossible to obtain a true picture of the social cause-effect relations if we are content with explaining only the purely economic causes and effects in Business; that it is impossible to find the causal relations between social changes, if we are not constantly aware of these juridical causes and their great significance as positive or negative causal conditions underlying the social processes of change. If we consider only Karl Marx's disastrous error of inference, and the views of economists on the depression of 1921 and the succeeding years, these are in themselves sufficiently deterring examples of methodological errors in the social sciences.

At the same time I have tried to show that in the phenomena of human society — as in the phenomena of physical nature — it often suffices to point to a single process of change in order to demonstrate a law-bound coherence between the changes. The depression of 1921 in itself shows clearly a law-bound coherence between the social changes and the non-presence of the juridical causes enumerated under a, b, c.

In sociology — as in natural science — the law-bound coherence between the changes (popularly called the relation between cause and effect) is a means of cognition and orientation in the world. We have no final proof that law-bound coherence in the last instance gives us the true cognition of the world. On the other hand, there is no proof that law-bound coherence gives us only a subjective perception of the world, i. e. a perception derived from the nature of our intellect. The opinions of *Hume* and *Kant* maintaining this view cannot be proved epistemologically. I have shown elsewhere that Hume's and Kant's view on the subjective nature of our apprehension of causality or law-bound coherence rests on what I have called a basic delusion, an epistemological selfdestruction, viz: in proving the subjectivity of the cognitive factors, these philosophers unconsciously make use of those very cognitive factors which they assert are subjective.

See my book: Erkendelse og Vurdering (Cognition and Evaluation) p. 154 seq. on the basic delusion in epistemology. We must descriminate sharply between *basic delusion* in a more restricted sense or destruction of basis, and *circularity* according to epistemology and other ways of thought. This has been overlooked by *Ranulf* in his above mentioned work. Other philosophers have demonstrated circularity in various branches of science. But the basic delusion has only, to the whole of its extent and significance, been elucidated in my book.

In his: Formel Logik, *Frithiof Brandt* has proved how untenable is a thesis denying the validity of the logical basic principles. Ranulf (p. 161—64) challenges the assertion of Frithiof Brandt, viz: he who denies the validity of the logical principles, must recognize them even during his argumentation. Ranulf holds that this assertion is similar to the well known statement: A Cretan says that all Cretans are liars, (p. 163). This comparison is unwarranted. The assertion of the Cretan that all Cretans are liars is easily refuted by stating that the Cretan has not proved his assertion; for this reason alone it is incomprehensible that even prominent philosophers have wasted time in discussing such nonsense. However, when the statement is: he who denies the validity of the mathematical logical axioms, for instance: $a = b$, $b = c$, therefore $a = c$, must even in his denial acknowledge them. Frithiof Brandt not only showed that the denier has not proved his assertion — as in the case of the Cretan's allegation — but he has also showed that the denier's assertion can in no way be proved: because the moment he tries to prove it, he must make use of the very axioms, whose validity he is denying. He has to prove that in his denial of the usual logical axioms he makes use of other axioms than these, and then he would have to prove the validity of the latter. Therefore he starts out from what he had to prove. Consequently, the assertion of Frithiof Brandt cannot be refuted.

Further, I should like to remark that when Ranulf writes (p. 164): »the error made by Brandt is taken over by Vinding Kruse,» then, firstly, Brandt has committed no error, as has just been proved; and, secondly, I have not »taken over» anything, for the simple reason that Brandt and I speak of different things. Brandt's remark in Formel Logik p. 91 refers — as would seem natural in a work on formal logic — only to the mathematical logical axioms, and he is right in criticising the mentioned circular trend of thought. While in my book: Erkendelse og Vurdering (Cognition and Evaluation) p. 154—205 I deal with the methodic error by me called the *basic delusion* in epistemology, and with the assertions of the critical writers on epistemology — particularly Hume and Kant — on the apriority and subjectivity of the cognitive factors, i. e. the assertions of these and later philosophers on space and time, causality, identity, the notion of substance, similarity and difference. The basic delusion in epistemology, ancient and modern, on all the points mentioned, consists in an *epistemological self-destruction*, which must be clearly *discriminated from circularity*, »b». Circularity (»b») means that you start from what you are going to prove. »a» The basic delusion or epistemological self-destruction consists in trying to prove that these

and other cognitive factors are devoid of objective validity, — but unconsciously during the argumentation you use the very factors whose validity you deny. Thus, Ranulf has not understood my thesis on the basic delusion; and, quoting the allegation of the Cretan, he confounds these two things in an absurd manner, viz: »a» epistemological self-destruction, and »b» circularity; which have nothing to do with each other.

Experiment.

We may now turn to the basic problem mentioned at the beginning of this chapter: Ethical nihilism rests on the traditional conception of the notion of science — is this conception right? As mentioned above, the traditional definition says that science is only observation and description of what is, and that it should be possible to prove all assertions to be either *true* or *false*, i. e. either corresponding or not corresponding with our observations of what is, what exists. As this is asserted to be the only true scientific verification, all statements claiming that something ought to be or must be are devoid of scientific meaning. They cannot be verified through observation as being something that *is*, therefore they fall outside the boundaries of science; all ethical and juridical assertions are non-scientific, subjective, irrational expressions of sentiment. It is true, as I have shown, that as legal rules in laws and law-court practice they may be ascertained as factually existing and as causing changes in economical and other causal relations. However, the *contents* of the rules are, as ought-to-be-phenomena inexplicable and cannot be scientifically proved. We can only note that certain psycho-social causes — law and morality — exist, that they influence the life of humanity, factually causing changes in it. But science cannot explain why they have this influence. All these psycho-social causes are set in motion by human acts of will, sometimes by collective acts of volition, and therefore humans should as soon as possible put a stop to this activity, because it is unreasonable to enforce upon humans rules like those of law and morality, which from a scientific point of view are without sense or meaning. If people voluntarily follow certain rules on how they ought to or must act, that is their own

concern; but compelling them to obey, as do the precepts of the law and law-courts, or urging them to follow certain rules, as does morals — that is unjustifiable from a scientific point of view.

The question now is whether this inherited definition of science and scientific verification is right?

Science of older times was mainly descriptive. The subjects first organized as sciences were mathematics, astronomy, physics, chemistry etc., and they kept to factual descriptions of the external mechanical world, its characteristics and conditions in space and time, similarities and differences, and law-bound coherences. Later on the organic world was included under the domain of scientific research; at first also these sciences were purely descriptive, such as botany and zoology, limiting themselves to mere descriptions of the external characteristics of plants and animals, and division into species and varieties. Later on a thorough study of causal relations in the animal and vegetable worlds was undertaken, a research into the changes and their so-called causes; and so animal and vegetable physiology arose, together with kindred sciences such as geology, investigating the changes, the development in both the unorganic and the organic world. Also man as an organic being was included in the studies of science, and a number of purely descriptive sciences took shape, anatomy, physiology, psychology.

Also abnormal conditions, phenomena of infirmity or illness in organisms were made the object of a purely descriptive sciences took shape, anatomy, physiology, psychology.

Present day science, however, does not limit itself to describing the factual correlations in time and space, similarity and difference and law-bound coherence. A number of other sciences have made their appearance in modern times, which are still increasing in number and importance, and for the very reason that they yield something different from and more significant than a mere description, they have gained a radical influence on the life of humanity. As a matter of fact, they have in the course of the last 150 years completely revolutionized the conditions of life

for mankind, in such provinces as cultivation of the soil, exploitation of raw materials, dwellings, means of traffic, communication etc. These sciences are called the applied or practical natural sciences — in contradisctinction to the above mentioned descriptive or theoretical natural science. Among the most important of these sciences dealing with the unorganic world may be mentioned technology, mechanics, electro-technics, technical chemistry, engineering (including the construction of buildings, factories, roads, bridges, and hydraulic engineering), and the various branches of science concerned with technical means of transport, telephone, telegraph and radio. Among sciences dealing with the organic world may be mentioned: the science of agriculture and forestry, veterinary and medical sciences.

None of these modern sciences would have come into being if they had kept to science in accordance with the traditional definition, i. e. a mere description of what is. What is the method — quite different in nature from the descriptive method — which has created these sciences and made possible their powerful intervention and transformation of the life of mankind?

This method we can best characterise as *the method of experimental experience.* Modern natural science uses two methods: *description* and *experiment.* The latter is based on the assumption that the laws of nature are valid regardless of time, i. e. they are assumed to be valid for past, present and future. That the laws of nature will be valid in the future is strictly speaking unprovable. No induction, however extensive, can give proof in this respect. Even if we have observed millions of instances where the change »a» (»the cause») is followed by the change »b» (»the effect») — the heat and the melting of the metal — we have no assurance that also in future »b» will succeed »a». Nevertheless, the natural sciences, both descriptive and experimental, work on the assumption that the laws of nature are generally valid in time, consequently also in the future. This assumption is the basis of experimental natural science. The latter may be used in the service of descriptive or theoretical

natural science, for instance in order to ascertain whether mixture of the materials »a» and »b» gives the material »c». In the applied or practical natural sciences the experiment is used by means of certain changes, causes, to produce changes, effects, which are beneficial to mankind, useful for satisfying the needs of mankind in the best possible manner. These changes may in short be called expedient. Thus modern natural science makes systematic use of the *ascertaining experiment* and the *expedient experiment* — in the descriptive and applied sciences respectively. The expedient experiment may also be named the *evaluating* experiment.

The expedient experiment is built up on the following train of thought: we discover that we are not limited to observing passively, merely as spectators, the process: when change »a» occurs, change »b» immediately follows, in accordance with what we call cause and effect; we discover that we ourselves may intervene actively in the processes of change occurring in nature, we may effectuate the change »a», and also in this case the change »b» will follow. Thus technology and mechanics find that by a certain arrangement of machinery and labour »a», we shall obtain the expedient capacity of production »b»; electrotechnics finds that by passing a current of strength »a» through a wire, we shall obtain an expedient light effect Agricultural science finds that by using certain grain and treating it in a special manner, we shall harvest a manifold return, i. e. obtain an expedient result. Medical science finds that by employing insulin and penicilin against certain illnesses, healing changes, i. e. expedient changes take place in the human organism.

From the above it follows that the traditional conception of the notion of science as a mental activity which only observes and describes what is, is not true. Already the laws of nature, valid at any time, exceed this definition and are based on the idea that something *will be*. Here we must use other expressions than: something *is* or *is not*; instead we must use expressions like: *it is probable* that the causal relation »a»—»b» will also occur in future. However, by the most important method of

applied science — the expedient experiment — the traditional definition is completely shattered. Here we must employ quite different linguistic expressions; *is* or *is not* will not suffice. And we shall find that special linguistic expressions have involuntarily grown up for the use of the expedient experimental experiences. In applied science we generally express ourselves in the following manner: in order to obtain the expedient effect: the carbon arc lamp, we *must* use certain substances and an electric current; in order to obtain the expedient effect: cure of or resistance against diabetes, we *must* give injections of insulin. When the expedient effects are of vital necessity for human beings, we use the strongest expressions of the language, *shall, must, have to, ought to.* ....

The traditional definition limiting all scientific assertion to 2 classes: true or false, must accordingly be rejected as untenable. Besides the two assertions that something is true or false — and statements on the laws of nature expressing future probability — we have judgments following on the expedient experiments, expressing that something has to be, must be, or ought to be; or stating that: it is expedient to employ change »a» in order to obtain change »b». We may also use the expression: it is *right* to employ »a» for that purpose.

The method of the applied sciences is not, as hitherto believed, limited to the *physical* world. We have observed that the laws of cause and effect can be used in the human body in order to create beneficial and curative effects, and naturally the method has been further developed. During the development of the branch of applied science thus created, medicine, we have also been led to observe and make use of the *psychical* cause-effect relations. Physiology has shown through the ascertaining experiment, and medicine through the expedient experiment that the absorption of certain substances by the organism has a beneficial effect, while the assimilation of others, such as large quantities of alcohol and cocain, etc. has a harmful effect on the organism; simultaneously we are bound to observe certain psychical effects, and to note that man is to a certain degree able to choose between

these effects, and that he is therefore able to control his inclinations to an exaggerated use of such stimulants. The ascertaining and the expedient experiments will therefore inevitably, through physiology, medicine and psychology, lead on to a scientifically seen new region; a region which so far has been treated in a somewhat casual and arbitrary manner by inherited morals and religion, with no real scientific basis or method in this part of philosophy called individual ethics. In this province we are badly in need of experiential material based on scientifically objective, exact experiences. However, certain theses may already at this point be set down: the traditional doctrines of faith inherited from morals and religion may be regarded with respect, because they are expressions of the experiences of humanity during thousands of years, but they no longer suffice for mankind; mankind must demand scientific grounds; and only a scientific, objective investigation of psychical phenomena, such as desires, passions, instincts, and an experimental empirical exploitation of the causal relations between these and their effects will be able to make way for true basic principles and laws to guide human conduct of life. At this point it will suffice to point out that man in his development from the animal stage to the human stage has shown himself in possession of a special quality characteristic of human beings, the faculty of being able — within certain limits — to control his psychical life. In my opinion, it is by means of the ascertaining and the expedient experiment that man, in the psychical region as well as in the physical region, will attain to the discovery that he can control his spiritual life, his thoughts and desires, directing them into certain channels leading to beneficial effects, and away from others which experience has proved to have harmful effects. The cultural value entailed by this human quality, the fruit of a slow development gained on humanity's road of suffering, may in one word be designated: *character* — in a qualitative connotation — or character-value. The law of expediency, in this way experimentally proved, that man by controlling his psychical life can attain beneficial effects, we may call: the *Law of Character.*

In exactly the same manner — by a multitude of ascertaining and expedient experiments during thousands of years, through suffering, labour and satisfaction — mankind has stumbled and groped its way along to another cultural value indispensable for humanity: *the community*. For man, fighting a multitude of dangers in the surrounding nature, striving to rule over the earth, to command the powers of nature and create new values, the phenomenon we call society or community has proved to be the most potent guardian and protector, the only means of securing the individual's peace to work and live. The community has, partly through numerous forms of co-operation between men, created (1) a defence against the dangers of nature, and an organized exploitation of the powers of nature; and, partly through a strong social power, has attempted (2) to prevent human beings from doing harm to one another. In all human communities through the times, in all codes of law, from the laws of Hamurabi and Moses to modern criminal law and laws of compensation, the elementary commandment sounds: You shall not harm your neighbour. The law divides this commandment into many different precepts: you shall not kill; you shall not steal; you shall not bear false testimony against your neighbour; you shall not offend his honour, etc. But all these precepts may be gathered in one commandment: You shall not harm your neighbour. This commandment sounds through all codes of law as the fundamental principle permeating all legal and moral rules in this domain: the community of human beings. The reasons, based on experiment and experience which have led men in all times and all sections of life to arrive at this commandment as the fundamental law, may be set down as follows: (1) the observance of the commandment will at least spare people the pain and trouble which they would otherwise inflict upon one another, and (2) it will give the individual peace to work. If people are to obtain any results from their industry, ingenuity and initiative, it is an absolutely necessary condition that they are left to work in peace, that the individual has the assurance of safety in the community, that his activity is not disturbed, that other

people are prevented from interfering and doing him harm. In the primitive days of old, too much precious time was lost, because the individual — to use a figure of speech — had to work with his trowel in one hand, and his sword in the other; while he was working, he must incessantly defend himself against enemies from outside. Present day society has secured working peace for the individual by taking over the sword; by enforcing law and order, it compels people to leave off killing, wounding or in other ways doing harm to those who are peacefully at work. This law: you shall not harm your neighbour, has thus been affirmed by experiment, and we may call it the *Law of Society.*

The descriptive empirical method and the experimental empirical method must be employed together, also in the sciences treating of human psychical life, including the social sciences. The branch of medicine dealing with mental diseases, psychiatry, starts by giving a description of the phenomena of the disease and their causal relations, and then aims at giving the patient an empirical experimental treatment based upon these causal relations. In exactly the same way criminology must begin by giving a biological and sociological description of the different types of offenders, and of the social surroundings under which they have grown up and are now living. The next step is, through experiments and experience, to find the most expedient method of treatment — either punishment or cure. By experimental experiences through thousands of years, mankind has come to recognize that it is expedient to observe the Law of Character and the Law of Society. These laws have been included, as far as is practically feasible, in criminal law; therefore modern criminology must, through an extensive use of experimental experiences, endeavour to find a way to physical and psychical treatment of offenders against these laws, in each case the most expedient treatment as far as both the individual and society are concerned. It is well known that in modern jurisprudence and crimonology there is a strong tendency to consider punishment only as a means to an end, viz: in the most practical manner to yield society protection against criminals, and to relinquish the view of older

times considering punishment as a retaliation, as an atonement of guilt, cf. the interesting treatise by *Åke Petzäll*: The social function of punishment, in »Theoria», 1947, vol. XIII part I, p. 1—46 (criminal cases p. 30—46) and *Olof Kinberg*: On the concept of »Psychopathy» and the treatment of the so-called »Psychopaths», same journal, 1946, vol. XII, part III, p. 169—180. Accordingly, it is evident that jurisprudence and criminology must be based upon extensive experiences as to which kinds of treatment, punishment or cure, are most practical in use on the different types of criminals; here we also include preventive methods to be used on certain types especially dangerous to society, *before* they have committed a crime. The scientific method in this section of sociology is on the whole the same as that used in the applied natural sciences; I have described it as: the empirical experimental (evaluating) method, or: the experimental method of arriving at the most expedient effects on the basis of the widest possible experiences. However, even the opinion maintained by some, that punishment is first and foremost retaliation, the individual offender's atonement of guilt, cannot be based upon metaphysical conceptions, but only upon experimental experiences, to the effect that a treatment of lawbreakers, graduating punishment in proportion to the more or less serious character of each single crime, gives the most practical results both for the individual offender and for society; accordingly, the group of people to be treated in this manner must be limited to quite normal criminals. All references to »indeterminism», to »the freedom of the will» or to »determinism» must be dismissed as mystical conceptions, which cannot be proved by experimental experiences and therefore are useless in modern science. The problem of determinism-indeterminism is — as I have attempted to prove elsewhere — a sham-problem, a problem on metaphysical notions lying outside all scientific experience. We do not even know the meaning of »cause and effect relation» or »law-bound coherence» in the physical world; therefore it is altogether useless to discuss the old problem: determinism-indeterminism in the psychical world. We may in future spare ourselves this whole

discussion and the time wasted upon this old metaphysical problem never to be solved through experience and lying entirely outside the realm of experience, cf. my exposition in Erkendelseslæren og Naturvidenskabens Grundbegreber (Epistemology and the basic concepts of natural science) 1941, p. 159—64 seq. and in Erkendelse og Vurdering (Cognition and Evaluation) 1942 p. 260—61, 233—35. In criminology there can be no reason whatever for taking up this impossible old metaphysical sham-problem; it is sufficient to state that it can be proved through extensive experimental experiences that by means of various methods of treatment, tested by experience, it is possible on various types of criminals to obtain certain effects, expedient for the individual and for society. All metaphysical conceptions on guilt and the like — whether they are based upon impossible ideas such as »indeterminism» or »determinism» or on other ideas — can beforehand be dismissed as being scientifically untenable. The basic notion of guilt can be maintained only if, on the basis of our experimental experiences in this psychical province, it can be proved to be expedient, practical in attaining certain social and individual effects, see my investigation in: Retslæren (Jurisprudence) I, p. 275 seq. The fundamental principles in lawgiving, showing the different but equally justified connotations of the notion of justice, are also upheld by mankind's experimental psycho-social experiences through thousands of years, see the above mentioned book p. 25 seq., cf. Erkendelse og Vurdering p. 370 seq.

The basic concept of »right» is in science of to-day not a metaphysical problem, with an abstract »nature», from which to deduct conclusions, it is simply a *benefit*, which through many experiences it has proved *expedient to protect* as far as is practically feasible. In jurisprudence a benefit has the same meaning as in modern political economy: a constant cause of satisfaction of needs. Only careful experimental experiences can show which social benefits are to be protected by means of lawgiving. We can never on the basis of the »nature» of a certain right, for instance the right of mortgage, deduce certain juridical effects

or deny their validity. Elsewhere I have expressed it as follows: If certain practical effects of a right »are at variance with the »nature» of this right — then it is so much the worse for this right's »nature». This »nature» can do only like the Moor: it has done its duty and may leave.»

Not only in criminal law and theory of law must science make use of the method of experimental experience in order to find the most expedient solutions, the same methods must also be used in civil law and constitutional law. As an example I should like to mention that only by a purely empirical experimental investigation of how the French, English, German and Scandinavian rules on legal registration of rights of real property have worked out in practical life, can we arrive at the most expedient legislation in this province, cf. my memorandum on the Danish law on legal registration, 1926: Tinglysning samt nogle Spørgsmaal i vor Realkredit, 1923. The same applies to many of the great and small problems as to what are the best regulations in civil law on such matters as purchase and sale, rent, bail, the instalment system, insurance, and so forth. In all these provinces we use the same experiential method as in the natural sciences. Through a number of psycho-social, economic, technical and other experiences, we try by the empirical experimental method to find the most expedient legal rules. Naturally, jurisprudence, like all social sciences and natural sciences, is both descriptive and experimental, partly a description of actually existing law and justice, partly an empirical experimental investigation of what are the best laws and regulations. However, as shown in the theory of the sources of law, even descriptions of the actually valid laws are so permeated by cause-effect investigations and discussions as to which rules would be most expedient in the various provinces, where the law is found to be imperfect, unsatisfactory or obscure, that even positive jurisprudence may just as well be called an experimental empirical science as a descriptive science.

What is true of criminal law and civil law also applies to constitutional law. In the description by historical science of the cause-effect relations in the constitutional life of different soci-

eties we posses an enormous empirical material throwing light upon the problem of which constitution is the most expedient. We may mention as examples the enormous amount of experience to be derived from a thorough investigation of the decline and fall of the Roman society, the disasters befalling the modern German and Italian dictatorships, and of the circumstances leading to the victory gained by these dictatorships over older democratic constitutions. This whole sum of experiences lies open to experimental investigation and exploitation for the benefit of future constitutional life in the societies.

Ethics, besides being a description of existing moral habits etc., can in future only continue as a clinical experimental science, like medicine; therefore it should as soon as possible descend from the airy heights of abstract discussions on morals, try to walk on earth, directing its whole effort towards practical psychical and psycho-social investigations, to find out the conduct which science, after experimental experience, must recommend mankind to follow as the most expedient in order to attain to a life of safety and happiness.

From the above it will now be clear that the juridical factors intervening in economic and other sociological cause-effect relations, which we had to leave as the unknown X in these causal relations, because they seemed irrational or rather arational as seen from the traditional conception of science, in reality are quite natural and scientifically comprehensible rational factors, viz.: as applied or practical sociology, as rational experimental intervention in social causal relations in order to obtain the effects most expedient for society. Consequently, the whole artificial theory of value-nihilism, with its tortuous maze of absurd and futile ideas, may be discarded both in sociology, political economy, jurisprudence and ethics. We may now delete this curious chapter in the history of human delusions; and masses of complicated and artificial thought-constructions in books and periodicals may now be regarded as waste-paper. In future we shall be able to devote

ourselves exclusively to a fertile practical task: in all applied sociology, jurisprudence, political economy etc. we shall endeavour through the *experimental empirical method* to find the most expedient means of intervention in social causal relations, and thus work out the most satisfactory conditions in these domains for human society.

Science, both the natural sciences and the social sciences, may in accordance with the above be divided into two sections:

I. Description of facts.
II. Experimental investigation of what is expedient.

Verification by experience accordingly means:

I. Proving an assertion as being in accordance with reality, as being true,
II. Proving the empirical experimental correctness of an assertion as being expedient, as proving which behaviour we ought to follow.

Progress in science often consists in replacing a complicated and artificial explanation of the phenomena by a simple and natural explanation. Many scientific investigations make simplex complex and others make complex simplex. As a rule it is the latter which bring progress to science. The traditional conception of science was well fitted to the inherited descriptive natural sciences; but, when it was transferred to the social sciences, it led to the result that no rational scientific grounds can be given for the rules of justice and morals; it led to ethical nihilism and its complicated attempts to explain why people to an anormous extent follow the rules of morales and justice — that society enforces a whole system of these rules — though no scientific grounds can be shown to uphold them. In the above I have tried to show that, if we *transfer* the *empirical experimental method* on the expedient effects from a main group of natural sciences, the applied sciences, *to the social sciences*, the

rules of morals and justice will find a natural and simple explanation as directives for mankind to obtain these effects. Then all the attempts of ethical nihilism to give some artificial explanation are superfluous. The inherited rules of morals and justice must, of course, through the experimental empirical method be submitted to a thorough examination and criticism. But the rules of morals and justice are now securely anchored in scientific experimental experience; and I have, as far as I can see, proved that future experimental clinical ethics and jurisprudence are sciences quite as well as the applied natural sciences.

Natural Implication and Material Implication.

By

Erik Stenius.

In an article in this journal [1] Eino *Kaila* deals with the often discussed problem of the relation between the meaning of the sign of implication in modern symbolic logic and the meaning of the combination of the words »If . . then . .» in natural language. In this connection he touches on the so called problem of disposition as treated by Carnap and recommends it for further investigation. I wish in the following paper to give, within certain limits, a fairly comprehensive analysis of the relation between natural implication and — using the term as used by Lewis [2] — the material implication of symbolic logic.[3]

In the light of this analysis I shall endeavour to make some deductions as to the origin of the problem of disposition by the use of material implication.

The symbolic logic lays down the principle that the truth or falsehood — the so called truth-value — of any logical junction of propositions is uniquely determined by the truth-values of the propositions in the junction. Thus for instance a proposition of the form »A and B» is *true*, if A is true and B is true; other com-

[1] Wenn . . so . ., Vol. XI 2, 1945 page 88.

[2] *A Survey of Symbolic Logic.* Berkley 1918.

[3] Earlier attempts to introduce a meaning of the word »implies» which is more in accord with natural language, are, e. g. the »strict implication» of Lewis, presented in the work quoted above and the intuitionistic logic of Heyting presented in Mathematische Grundlagenforschung — Intuitionismus — Beweistheorie. *Erg. d. Math.* Vol. 3, 4 1925. I do not find their conclusions quite satisfactory, however. Cf. note 1 on page 143.

binations of the truth-values true and false for A and B give the proposition the truth-value »false». If we know the truth-values of the propositions A and B we can then determine whether the proposition »A and B» is true or false. In the same way the truth-value of the proposition »If A, then B» — »$A \rightarrow B$» — is considered a uniquely determined function of the truth-values of A and B by stating that »$A \rightarrow B$» is false, if A is true and B false, while all other combinations of true and false for A and B correspond to the truth-value »true» for the whole of the proposition. Hence a false proposition implies every proposition.

Now if the sentence[1] »$A \rightarrow B$» is pronounced »If A, then B» we get a divergence from its ordinary use. Symbolic logic considers the proposition »If there is lightening tomorrow, then it will thunder too» true, if there is no lightening at all tomorrow. Kaila remarks that the stoics had already adopted this interpretation. But it is not in accordance with the meaning that we immediately connect with the words »If . . then . .». The divergence appears cruder still when we examine the proposition »If $2 \cdot 2 = 5$, then the snow is black», which is described as true in Hilbert-Ackermann's »Grundzüge der theoretischen Logik».

I will begin by examining the first example. Kaila remarks that material implication differs from natural implication at least in this respect: — In ordinary language the proposition »If A, then B» appears to have no determined truth-value at all if A is false. E. g. the proposition »If there is lightening tomorrow, then it will thunder too» does not include the possibility that there may not be lightening at all tomorrow, and we cannot in this case infer either its truth or its falsehood.

It seems clear that this characterization of the »If . . then . .» of natural language in the case we have examined is correct. But when we begin to consider the matter further we may easily have the same experience as those who entered into discussion with Socrates. What in the first moment seemed clear to us does not seem clear any more. We may reason as follows: If there is no

[1] I use the word »proposition» as denoting the meaning of a sentence, the word »sentence» denoting the phrase expressing a proposition.

lightening tomorrow, then the proposition »If there is lightening tomorrow, then it will thunder too» is not false. But if the proposition is not false, mustn't it then be true? The assumption that the proposition »If A, then B» has no determined truth-value when A is false compels us to examine the difficult question of the validity of the principle of *tertium non datur*. Is it possible that a proposition could be neither true nor false?

To deny the validity of the principle of the excluded middle has become an almost classical method when trying to find means of escaping logical problems. Russell remarks that a proposition need not be either true or false, it may also be meaningless. We can as an example take the proposition »Beauty is red». It is neither true nor false, it is meaningless. This, according to Russell, is due to the fact that the word »beauty» does not belong to the »range of significance» of propositions of the form »*x* is red» [1]. To any propositional function, i. e. form of propositions, as for example »*x* is red» [2], does not only belong a range of objects for which it is true, but also a larger range of *significance*, for which it is significant. If in a propositional function an object that does not belong to that range of significance is substituted for the variable, the resulting proposition is neither true nor false, it lacks significance [3].

Against such a view objections can be made as to the concept of *negation*. If you say that a proposition need not necessarily be either true or false, that it also may be meaningless, then you

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[1] *Principles of Mathemathics*. Cambridge 1903, page 523. In the later, more precise work of Whitehead and Russell *Principia Mathematica* these meaningless propositions are not called »propositions» at all but »meaningless symbols». Thus, denying of the principle of the excluded middle is formally avoided.

[2] Exactly expressed: a propositional function is the »meaning» of a form of sentences.

[3] On this distinction the so called Theory of Types is based in Principles of Mathematics. In Principia Mathematica the theory of types is based on the terminology that »meaningless propositions» are no propositions. However, in reality I do not think the difficulties concerning the concept of negation that will be put forth in the following will disappear by such a mere change of terminology.

have introduced a third possibility in addition to the two possibilities »true« and »false«; you have created a sort of »three-valued« logic. I think it might be permissable to introduce as many such truth-values as you like. But this does not, in reality, by itself increase the number of logical possibilities. For if you can divide propositions into three or more different categories, then you can always also divide them into two categories: the propositions that belong to one of the three categories and, those that belong to either of the two others i. e. that do *not* belong to the first category. If any proposition is either true, false, or meaningless, then I think »not true« no longer means the same as »false«; it means »either false or meaningless«. But I also think that »false« does mean the same as »not true«. Therefore we could, taking the example »Beauty is red«, come to a similar conclusion as with regard to the implication examined above: If the proposition »Beauty is red« is meaningless, then it is not true, but if it is not true, then it is false. And then beauty belongs after all to the range of significance of the propositional function »x is red«. Anyhow, if »false« does not mean the same as »not true« then the same logical difficulties that, by assuming these idioms meaning the same, rose from using the word »false«, will now rise from using the expression »not true«.

These difficulties are avoidable if we realise that the formulation of such a proposition as »This proposition is meaningless« points in a wrong direction. What do we state when we say that the proposition »Beauty is red« is meaningless? I want to emphasize, and this is the essential point, that we *do not state that it is not true*, we only state that we *do not know* whether it is true or false. But we cannot state *definitively* that we do not know a thing, it is a question of our actual state of knowledge. Therefore we ought not to say that the proposition »Beauty is red« *is* meaningless, we ought to say that it *is* meaningless *at present*. It is a sort of hypothetic proposition.

This assertion may seem false. I can imagine the objection that although there are propositions of which we do not yet know the truth or falsehood because this can be decided only in

the future (as for example the proposition »The necktie that Mr N. N. wears next Wednesday will be red»), such propositions should nevertheless be significant. Meaninglessness should imply that such a decision cannot be made. But this objection is irrelevant. There is certainly an important difference between a proposition saying that a necktie is red and a proposition saying that beauty is red, but the difference is not one where it is impossible to decide in the future whether both of them are true or not. The difference is a difference in the basis of knowledge required before we can make such a decision. In order to be decided, the question about the colour of Mr N. N.:s necktie requires an *observation* of reality (direct or indirect), whereas the question about the colour of beauty can be decided only after a *definition* has been introduced. In the former case the basis of knowledge is material, in the latter also linguistically *formal*.

When completely formulated, our statement in regard to the meaninglessness of the proposition »Beauty is red» must run: In our *ordinary language* the proposition »Beauty is red» is meaningless (this is a statement about our ordinary language in its actual form). Therefore we can, by a *definition*, make it true or false as we please. Hence, when from the lack of significance of the proposition »Beauty is red» we conclude that it is not true, we *change* the *ordinary* language. By this course of reasoning we extend the range of significance of the propositional function »x is red», because we define the word »red» by stating that the proposition »Beauty is red» is false.

I will illustrate the remarks made above by another example. When we deal with a word the meaning of which is not given phenomenalistically as by the word »red», but which is from the beginning defined, the actual range of significance for a propositional function coincides with the *range of definition* of its predicate. Defined mathematical concepts possess in general a strictly determined range of definition. Let a and b be any numbers, then we may define a power in the following way: Let c be any positive integer, then

$$a^c = b,$$

if and only if b is equal to a product of c factors, each of them equal to a. Then the range of significance of the propositional function $a^c = b$ is in respect of the exponent *at present* the range of natural numbers. If this range of significance should be definitive, we should be forced to accept that this propositional function also would be definitively meaningless, when for example a fraction or a negative number is substituted for the exponent. But as we know the definition is not regarded in this way, we just say: If c is a fraction, we cannot know whether a proposition of the form $a^c = b$ is true or false, because we have not yet defined the concept in this case. We could define it so that when c is a fraction the proposition is always false or always true, but we can also define it in the usual manner of mathematics. Such an extension of the ranges of definitions plays an important rôle in mathematics. As to the concept of power, we meet it in connection with every extension of the sphere of numbers; as when we extend their sphere by including zero and the negative numbers, the irrationals and at last the complex numbers [1].

To sum up: *Besides propositions which are stated true or false there are propositions of which we do not know whether they are true or false and the truth-value of which is hence not definitive. In the latter category I include such propositions which, only after a definition is introduced, may become true or false by observation. These, in a general sense of the word, »hypothetic« propositions a c t as a third alternative to true and false. In the proper sense of the expression there is no excluded middle.*

If only we realize that a proposition which plays the part of an excluded middle is, as a matter of fact, hypothetic —

[1] According to the theory of types as developed in Principia Mathematica a somewhat different view on such extensions should be adopted. Because the types of the positive and the negative numbers, fractions etc. differ from that of the cardinals, the »range of definition» of the concept of power is not extended by introducing new categories of numbers; the meaning of the concept is changed. However, whether the range of definition is extended or the meaning changed it does not influence the essential in our conclusion. In both cases the meaning is not *definitive*.

materially or formally — I think it will suffice to clarify the antinomies of the type »The Liar» which have created such a confusing situation in the mathematical theory of classes. I shall work this out on another occasion.

After these preparations I will return to the problem of natural implication. In his paper Kaila is of the opinion that the proposition »If A . . then B» of the natural language does not have any determined truth-value if A is false. By the terminology introduced above this is so expressed: The case when A is false does not belong to the range of significance for the natural implication »If A, then B», in this case, it is at present meaningless. If this characterization were valid, the material implication would only be a *generalization* of the natural implication. When introducing the material implication, we had only made a *definition* of propositions of the form »If A, then B» for a case when they in natural language have no determined meaning. But the matter is not as simple as that. I am now going to demonstrate this.

We say in natural language: »If there is lightening tomorrow, then it will thunder too», and we consider this assertion verified if there is lightening and thunder tomorrow (provided that any connection can be presumed between these two events). But if we have proved that there was lightening and thunder today, we do not express this as an implication. We just say: »There was lightening and thunder today». This is due to the fact, that in a proposition of the form »If A, then B» both the propositions A and B are always considered *hypothetical*. We may confirm this opinion by examining the following cases: Implication is used strangely enough not only in the proposition »If $2 \cdot 2 = 5$, then the snow is black», but also in the proposition »If $2 \cdot 2 = 4$, then the snow is white». On the first proposition we react with the counterquestion »Should the hypothesis $2 \cdot 2 = 5$ influence the colour of snow?», on the second with »Should the hypothesis that the snow was not white be prevented owing to the fact that $2 \cdot 2 = 4$?» Similarly we react to the proposition »If it is Sunday tomorrow, then the sun will set». These remarks are by no means new, but what do they mean? They show us that the principle

on which the logistic method of defining the implication is based is not at all valid as to the natural implication. *The truth-value of a natural implication is no uniquely determined function of the truth-values of its members* [1]. If these truth-values are established, then we *abstract* from this fact, when we use a natural implication. When we say: »If Socrates is human, then Socrates is mortal», we mean that this proposition holds true independent of Socrates being a man or not. If we then apply the rule of modus ponens, we examine the validity of the proposition »Socrates is human» without any reference to the implication-proposition. From the validity of both propositions together we then infer the validity of the proposition »Socrates is mortal».

There is, however, some connection between the truth-value of an implication and the truth-values of its members. For if we can prove that the former is true and the latter false, then the implication cannot be true. In such a case I call the implication *directly falsified.* Under certain circumstances, which will later on be analysed in more detail, we also consider an implication verified, if its members are both true. In this case, I say that it is *directly verified.*

Similar conditions are valid in respect of a general implication. If we can point out a case in which the former member is true and the latter false, then I call the implication *directly* falsified. If we really can look over all the cases in which the former member of an implication is true (which very seldom is possible) then, under certain circumstances, we consider the implication verified. If so, I call it *directly* verified. In all other cases I say the implication is *not* directly verified or falsified. But that an

[1] For this reason I cannot agree to the systems of Lewis and Heyting, quoted on page 136. Lewis introduces a new truth-value, »impossibility». Its negation, »possibility», might stand for my hypothetical case. (Lewis, however, has not taken into account its indefinitive character.) But according to Lewis it is valid for the proper implication that an impossible proposition implies any proposition. In this I cannot agree with Lewis. When we establish an implication, we always presume that the premise-proposition is not impossible, i. e. if it for some reason or other should be impossible, we think of it as possible by establishing the implication. Similar remarks can be made in respect of Heyting's system.

implication ist not directly verified or falsified does not prevent it from being considered definitively true or definitively false. In such cases I say the implication is *indirectly* verified or falsified.

It is easy to find examples of such an indirect verification or falsification. According to the circumstances, a natural implication, the former member of which is false, is regarded false or hypothetical as well as true. The implication »If I throw my inkstand out of the window tomorrow, it will fall to the ground» we consider true, even if its former member is false, because the proposition is a special case of a general law of nature. The implication »If I throw my inkstand out of the window tomorrow, then it will fly to the moon» we consider false, because it is in conflict with the general laws of nature. Finally we consider the implication »If I throw my inkstand out of the window tomorrow, then it will hit Mr N. N. in the head» as hypothetical, because it is neither a special case of any general law of nature nor does it directly contradict any known law of nature.

In these cases the indirect verification is due to the fact that the considered implication is a special case of an implication that is stated to be generally true. In other cases it may, perhaps, be established otherwise. In any case it is a fact that an implication, the former member of which is false, is not always at present meaningless in natural language; it may be *considered true or false on indirect grounds even in natural language.* The proposition »Beauty is red» may by definition be made true or false according to our wish, because it is undefined in natural language, but the corresponding method is not available in respect of an implication. If an implication, the former member of which is false, is made always true (or always false) by definition, then there may appear *an obvious contradiction* to natural language. A further example of this is the proposition »If the sky is clear tomorrow, then it will lighten». This is in natural language considered false, because the proposition »If the sky is clear there will be no lightening» is true generally and hence also tomorrow. But as to the material implication it is true if it rains tomorrow. In conclusion: *The material im-*

plication is no generalization of the natural implication in cases where this is not defined, in many cases the material implication contradicts the natural implication.

But how is it, under such circumstances, possible that in numerous cases we can replace a material implication with the corresponding natural implication and conversely without further analysis? — this occurs continually in symbolic logic. In order to make this clear I will try to establish as perspicuous circumstances as possible.

Suppose a certain theory is based upon a system of propositions that are all stated definitively as true or false, their validity being subject to no further discussion in this theory. These propositions may for example express the result of certain physical observations. We make logical junctions of them by means of »and», »or» and »not», but without using »if . . then». Because the truth-values of such logical junctions are uniquely determined functions of the truth-values of the members of which they are composed, these junctions must also be definitively true or false. The system of propositions thus obtained I call the system of *basic* propositions of the theory.

An implication, the members of which are *basic* propositions — or if a general implication is in question, corresponding propositional functions — I call an implication of the *first order.* Let us consider a singular natural implication $A \overset{n}{\rightarrow} B$. (In the following, I denote natural implication by writing the letter »n» above the implication-mark, material implication by the letter »m»; if no letter is written, it can denote either of the two.) Then A cannot be true and B false at the same time. From our presumption that the truth-values of A and B are definitively determined, we therefore must conclude that A must be false or B true, which in symbolic language is expressed by $\bar{A} \vee B$. But this statement is nothing but $A \overset{m}{\rightarrow} B$, according to the definition of material implication. Corresponding considerations are true of a general implication. I conclude:

If a natural implication of the first order is true, then the corresponding material implication is also true.

Therefore, without producing any contradiction, we can always replace a *true* natural implication of the *first order* by the corresponding material implication.

In the same way we understand that, if a *material* implication *of the first order* is true, then the corresponding natural implication *cannot be* at least *directly falsified*. Hence, though a material implication of the first order may be true, the corresponding natural implication being false, we can always replace a true material implication by the corresponding natural implication without producing any contradiction to the *basic* propositions of our theory. This is what we mean, when we vaguely say that the proposition »If there is lightening tomorrow, then it will thunder too» is not false, if there is no lightening tomorrow. We should rather say it cannot be *proved* false. In the same way we can say that the propositions »If the sky is clear tomorrow, it will lighten», or »If I throw my inkstand out of the window tomorrow, it will fly to the moon», presuming that the sky is clouded tomorrow and that I do not throw my inkstand out of the window tomorrow, cannot be proved *false*, if thereby is meant that they cannot be *directly proved false*. Hence, if the validity of a theory is proved by the consequences that it produces on its basic propositions — which I think the positivistic attitude must demand of a physical theory, we can always replace the natural implications of the *first order* stated in this theory by corresponding material implications and conversely, without changing the contents of the theory.

The case is entirely different when dealing with implications of a higher order, the members of which contain other implications. Here such a replacement is not possible without the consequences being changed, even in respect of the basic system. The rule valid for a material implication that, if an implication is false its former member must be true, can be formulated as an implication of the second order. If the same rule is applied to natural implication we would get absurd consequences. E. g. if it is not valid that »if the sky is clear tomorrow, it will lighten», then »the sky is clear tomorrow» is a true proposition, if the im-

plications are considered as material ones. But if they are considered natural, this is nonsense. One must therefore be very careful, when one »translates» implications of any higher order than the first from natural language into formulas of logical calculus based on material implication; it may lead to unexpected consequences. I think everyone who has dealt with such formulas has experienced this [1] and I think that the only way of making such a translation is to replace, if possible, the implications of the higher order by implications of the first order with the same meaning. If this is not possible, I do not think even the »translation» possible.

I will illustrate the above with an analysis of the so called problem of disposition, which Kaila mentions in his paper. Suppose we give the following definition of a conductor of electricity: »A body is called a conductor of electricity if, after connecting it to the poles of a source of electricity, an electric current can be proved to pass through the body». We express this definition by a formula of the following kind: Let $P(x)$ denote that the *experiment* P of putting a body in connection with the poles of a source of electricity and making the arrangements for observing an electric current in the body, is performed on the body x, $R(x)$ that as a *result* of this experiment the phenomena R showing an electric current, for instance the deflection of a magnetic needle, is observed on x, $Q(x)$ that x is a *conductor of electricity*. Then the definition is expressed by the formula

$$(1) \qquad Q(x) \equiv [P(x) \to R(x)].$$

If the sign of implication is considered as denoting natural implication, this formula seems to have the intended meaning, when the concept of natural implication is interpreted in the way we have given above. If the experiment P has been performed on x, we consider x a conductor or not according to whether $R(x)$ appears or not. (Direct verification resp. falsification of

[1] This is partly due to the fact that our sense of when such a natural implication is used correctly is not quite clear.

the implication.) If P has not been performed on x, then the implication and hence $Q(x)$ is hypothetical, if we do not on indirect grounds conclude that the implication $P(x) \overset{n}{\rightarrow} Q(x)$ is true. In many cases we do so, for instance, if x is made of some material that we have earlier proved to be a conductor or if x is made of any metal, even so rare a metal that we can never perform the experiment P on that metal, because of the inductively established law that every metal is a conducting material. (The inductional presumption, necessary for the formula (1) not being contradictory, that every experiment on the same body must give the same result, can also be expressed in the formula, but to simplify matters we have left it out.) In those cases where the experiment is not performed we should read the implication thus: »If we should perform the experiment P etc.» Such implications formulated in the conjunctive mood cannot be expressed by material implication.

Because the sign of equivalance can be considered a double-directed implication-sign, the formula (1) is an implication of the second order. Its meaning also becomes entirely changed if we replace natural implication with material implication. If so, we could deduce from the formula that $Q(x)$ is true as soon as $P(x)$ is false, i. e. whenever we have not performed the experiment P on the body x. If we try to take into account the fact that the former member must not be empty in order to avoid the undesired consequence, we may get the following formula:

$$(2) \qquad Q(x) \equiv P(x) \,\&\, [P(x) \overset{m}{\rightarrow} R(x)].$$

Kaila points out that such a formula leads in its turn to as undesired consequences, for then $Q(x)$ is false as soon as we have not performed (or cannot perform) the experiment P on x.

It is interesting to notice that the formula (2) has exactly the contents that the formula (1) would obtain if we should interpret an implication as *false* whenever its former member is false, instead of true as by material implication. Also such an interpretation would not contradict the basic propositions of a theory.

Kaila mentions that every attempt to express a formula with the intended contents of the formula (1) by use of material implication leads to the same difficulties as the above-mentioned. This is not surprising, for any such definition eliminates the essential hypothetical moment in the meaning of natural implication.

Kailas' own suggestion that we have to interpret the implication as meaningless, if the former member is false, would lead to undesired consequences too, if one does not pay attention to this hypothetical feature of the natural implication. If the experiment P is not performed, then the implication would be meaningless, hence $Q(x)$ must also be meaningless. But as we have seen that need not be the case.

If we want to express a definition of an electrical conductor by means of material formulas, we must at first »translate» the propositions that are to be inferred from the definition to implications of the first order. In accordance with Carnap's [1] theories we can express them in the following way: 1:o If we have performed the experiment P on a body x *and* have got the result R, then $Q(x)$ is to be stated. 2:o If we have performed the experiment P on a body x and have *not* got the result R, $\overline{Q(x)}$ is to be stated. These implication are of the first order, hence they can be replaced by material implications:

(3) $$P(x) \,\&\, R(x) \overset{m}{\rightarrow} Q(x),$$

(4 a) $$P(x) \,\&\, \overline{R(x)} \overset{m}{\rightarrow} \overline{Q(x)}.$$

The latter formula can also be written:

(4 b) $$Q(x) \,\&\, P(x) \overset{m}{\rightarrow} R(x).$$

According to the rules for material implication these formulas can be united to the formula:

(5) $$P(x) \overset{m}{\rightarrow} [Q(x) \overset{m}{\underset{=}{=}} R(x)] \quad \text{or} \quad P(x)Q(x) \overset{m}{\underset{=}{=}} P(x)R(x).$$

This form of a definition Carnap calls a »reduction sentence». Kaila, however, makes the objection that this is not an explicit

[1] Rudolf Carnap: Testability and Meaning. *Philosophy of Science.* Vol. 3, 1936, and Vol. 4, 1937, pp. 441 foll.

definition, the possibility of »translating» every formula that contains $Q(x)$ to a formula not containing $Q(x)$ thus being lost. But I approve of Carnap's idea that this is not intentionally the case. I shall define my opinion as follows. We can confine ourselves to two cases, to which every other case of »translation» can be reduced. Suppose we have an assertion of the form

(6) $$Q(x) \overset{m}{\rightarrow} S(x)$$

i. e. a general law of nature which expresses that if a body is a conductor of electricity, then it also possesses some other property. A formal translation of such a proposition into a proposition not containing $Q(x)$ is not possible, but from this assertion and the formula (3) we get by means of the transitivity of implication the formula:

(7) $P(x) \,\&\, R(x) \overset{m}{\rightarrow} S(x)$ or $P(x) \overset{m}{\rightarrow} [R(x) \overset{m}{\rightarrow} S(x)]$.

In the same way a proposition of the form

(8) $$M(x) \overset{m}{\rightarrow} Q(x)$$

combined with the formula (4 b) gives the formula

(9) $M(x) \,\&\, P(x) \overset{m}{\rightarrow} R(x)$ or $M(x) \overset{m}{\rightarrow} [P(x) \overset{m}{\rightarrow} R(x)]$.

The formulas (7) and (9) are not logically equivalent to the formulas (6) respectively (8), for the latter cannot be deduced from the former. We can only get the formulas

(10) $$P(x) \overset{m}{\rightarrow} [Q(x) \overset{m}{\rightarrow} S(x)]$$

respectively

(11) $$P(x) \overset{m}{\rightarrow} [M(x) \overset{m}{\rightarrow} Q(x)].$$

These formulas are equivalent to the formulas (7) respectively (9). Why is this equivalence not valid for the original formulas (6) and (8)? This we can work out as follows: The formula (5) defines $Q(x)$ under the assumption that P can be performed on x. Supposing that P *cannot* be performed on x, the proposition $Q(x)$ is *not* defined by this formula, and hence it can be defined in some other way. The formula (6) expresses that $Q(x)$, in *whatever* way it may be defined for different objects, must imply $S(x)$. (If $Q(x)$ is not yet definitively defined for

some category of objects, the formula (6) expresses a condition that restricts the liberty in the choice of definitions.) Such a general proposition we naturally cannot deduce from the formula (7); from this can only be deduced that *if* $Q(x)$ is defined by the formula (5), then the formula (6) must also be valid; i. e. exactly what is expressed by the formula (10). But, on the contrary, without producing a contradiction to the definition (5), $Q(x)$ cannot be defined in such a way that (6) could be valid if (7) is not valid, i. e. (7) can be deduced from (6).

Such conditioned definitions as (5) are by no means devoid of interest. I think they occur more generally in mathematics than definitions of the type (1). As an example I only need take the definition of power examined above. The definition says that on the presumption that c is a positive integer, then $a^c = b$ if etc. This definition of power is valid only if c is a positive integer. And it is essential to the further development of the concept of power that this definition is valid only on this condition. Let $I(c)$ denote that c is a positive integer, $P(c, a, b)$ that b is the product of c factors a, then this definition using material notations can be written

$$I(c) \overset{m}{\rightarrow} [(a^c = b) \overset{m}{\equiv} P(c,a,b)] \tag{12}$$

in full analogy with the formula (5). In respect of this formula analogous relations are valid as in the formula (5) and the formulas (6)—(11). A formula that is at the same time of the types (6) and (8) is the formula

$$(a^c = b) \overset{m}{\rightarrow} (a^{c+1} = b \cdot a). \tag{13}$$

Evidently this law, if derived from the corresponding law valid for the relation $P(c, a, b)$, is not therefore considered true except for natural numbers, i. e. from the formula

$$P(c, a, b) \,\&\, I(c) \overset{m}{\rightarrow} P(c + 1, a, b \cdot a) \tag{14}$$

corresponding to the formulas (7) and (9) follows

$$I(c) \overset{m}{\rightarrow} [(a^c = b) \overset{m}{\rightarrow} (a^{c+1} = b \cdot a)] \tag{15}$$

but not the formula (13). The formula (13) cannot be derived in this way, but it can be made — and often will be made —

into a general law that restricts the choice of definitions of power, when the exponent is not a positive integer. Such laws, laid down as general conditions that the defined concept, if possible, has to fulfil, may be called in mathematics »The Principle of the Invariability of the Formal Rules of Calculation». If a sufficient number of such rules are adopted, a definition of an operation of calculation for a new sphere of numbers may become uniquely determined.

Similar deductions can be made if we replace material implication by natural implication. But if we do so, we get a striking difference between the two examples considered. It would never occur to us to put the mathematical definition (12) in the form (1), though (1) sounds plausible as a physical definition.

But also as a definition of physical concepts the formula (1) has some weakness. There is something in this formula that will offend ones »logical ear». This is partly due to the fact that the circumstances under which we consider the natural implication $P(x) \overset{n}{\rightarrow} R(x)$ verified, are indeterminate, which makes it obscure. But, as a matter of fact, it does not quite correspond after all to the intended state of things. I have mentioned before that a natural implication under »certain circumstances» can become »directly» verified. In this statement is implied that the implication also, under certain circumstances, need not be proved by verifying its members. Here is an example: »If the body A on an occasion grows wet, then the body B on the same occasion catches fire». If these occurrences are not considered to have any connection, then the implication is not considered verified, even if the members each by themselves may possibly be verified. We have to accept the opinion that there is no *logical* force compelling us to consider a natural implication verified only because its members are both verified. When we do so, we make an inference on similar grounds as when we state the validity of a general law by means of induction. That is, the verification can be made only if additional presumptions are introduced.

The presumption in this case is the following. According to the formula (1) we can from $Q(x)$ being false conclude that the implication $P(x) \overset{n}{\rightarrow} R(x)$ is false. However, the intended meaning of the formula is that, if the experiment P is performed on x, then we will get the result R. That is, we make the following formula true:

(16) $$[\overline{P(x) \rightarrow R(x)}] \rightarrow [P(x) \rightarrow \overline{R(x)}].$$

But this formula is not generally valid even if we interpret the implications naturally. We can imagine the possibility of the formulas $P(x) \overset{n}{\rightarrow} R(x)$ and $P(x) \overset{n}{\rightarrow} \overline{R(x)}$ both being true. (Certainly in such a case we should infer that $P(x)$ must be false.) But we exclude that possibility in the proposition (1). We assume the formula (16) as true. By means of this assumption we obtain that a *direct falsification* of $P(x) \overset{n}{\rightarrow} \overline{R(x)}$ means a *verification* of the formula $P(x) \overset{n}{\rightarrow} R(x)$. But the formula $P(x) \overset{n}{\rightarrow} \overline{R(x)}$ is directly falsified by the observation of $P(x)$ *and* $R(x)$. In the same way a direct verification of $P(x) \overset{n}{\rightarrow} \overline{R(x)}$ is obtained by observing $P(x)$ and $\overline{R(x)}$. We can write these consequences as formulas in the following way:

(17) $$P(x) \,\&\, R(x) \overset{n}{\rightarrow} [P(x) \overset{n}{\rightarrow} R(x)],$$

(18) $$P(x) \,\&\, \overline{R(x)} \overset{n}{\rightarrow} [P(x) \overset{n}{\rightarrow} \overline{R(x)}].$$

The additional assumption (16) can also be expressed by adding to the definition (1) the definition

(1′) $$[P(x) \overset{n}{\rightarrow} \overline{R(x)}] \equiv \overline{Q(x)}.$$

When the assumption (16) or the formula (1′) is added, the definition (1) becomes correct. But we may doubt whether under such circumstances a definition of the type (5) might not in a simpler way correspond to the aim of the definition. However, similar remarks as to the formula (1) can be made to the formula (5) and the formulas (3) and (4) from which it was obtained. If we state the formula (3) using natural implication

(3) $$P(x) \,\&\, R(x) \overset{n}{\rightarrow} Q(x)$$

we naturally make a tacit presumption. The experiment P must

be performed in such a way as to convince us that the result R cannot appear by an incident, i. e. the appearance of R surely must not be due to any other cause than P. Hence, if $P(x)$ & $R(x)$ appears, we presume that $R(x)$ must be a consequence of $P(x)$. But this would be expressed exactly by the formula introduced above:

$$P(x) \,\&\, R(x) \xrightarrow{n} [P(x) \xrightarrow{n} R(x)], \tag{17}$$

i. e. the implication is directly verifiable. In the same way the intended content of the formula

$$P(x) \,\&\, \overline{R(x)} \xrightarrow{n} \overline{Q(x)} \tag{4 a}$$

is obtained only by means of the formula

$$P(x) \,\&\, \overline{R(x)} \xrightarrow{n} [P(x) \xrightarrow{n} \overline{R(x)}]. \tag{18}$$

To write the formulas (3) and (4) exactly, we have to write them in this form:

$$[P(x) \xrightarrow{n} R(x)] \xrightarrow{n} Q(x), \tag{3'}$$

$$[P(x) \xrightarrow{n} \overline{R(x)}] \xrightarrow{n} \overline{Q(x)}. \tag{4'}$$

To make these definitional formulas practically applicable we add the presumptions (17) and (18). From these we can deduce the formulas (3) and (4).

The formula (3′) is »half» of the formula (1), the formula (4′) »half» of the additional formula (1′). The formulas (3), (4), (17) and (18) enable us to make the following conclusions: If the experiment P is performed on x we can conclude $Q(x)$ from $R(x)$ and $\overline{Q(x)}$ from $\overline{R(x)}$. If we for some reason suppose $Q(x)$ true or false, we can from this fact and $P(x)$ conclude $R(x)$ respectively $\overline{R(x)}$ and hence, according to (17) and (18) also $P(x) \xrightarrow{n} R(x)$ respectively $P(x) \xrightarrow{n} \overline{R(x)}$. The only conclusion of (1) that cannot be made from these formulas is *the conclusion from* $Q(x)$ *to* $P(x) \xrightarrow{n} R(x)$, *when* P *cannot be performed on* x. But in this case the formula $P(x) \xrightarrow{n} R(x)$ has no *material* consequences. From a positive point of view it is empty. In the same way the only conclusion from (1′) not derivable from these formulas is the conclusion from $\overline{Q(x)}$ to $P(x) \xrightarrow{n} \overline{R(x)}$,

when P cannot be performed, i. e. when this formula is positivistically empty. In reality these cases do not more mean a definition of $Q(x)$, they only mean *a definition of the natural implications* $P(x) \overset{n}{\rightarrow} R(x)$ and $P(x) \overset{n}{\rightarrow} \overline{R}(x)$ for such cases, in which these implications are not defined before. Hence the possibility of complete translations by means of the formula (1) is only apparent. What is empirically expressed by sentences containing $Q(x)$ can also be expressed by sentences not containing $Q(x)$ on the basis of the definitions (3′) and (4′) and the additional assumptions (17) and (18). This elimination can be performed in the same way as the elimination on pp. 150 foll. By use of material implication the formula (5) on page 149 will give almost a correct description of what is emperically expressed by the definition (1).

To sum up: The truth-value of the natural implication is determined by the truth-values of its members only in one case, i. e. when the former member is true and the latter false, in which case the implication is false. This condition can be expressed by means of the following formula:

(19) $$A \overset{m}{\rightarrow} [(A \overset{n}{\rightarrow} B) \overset{m}{\rightarrow} B].$$

In every other case the natural implication is, a priori, hypothetical, it can be made true or false only if some additional assumptions are introduced. These can by themselves be made arbitrarily as long as they do not contradict the condition (19) and other *previous additional assumptions.* In natural language assumptions of this type are, however, often *tacitly* introduced. For this reason, the intention of a natural implication as to what is beyond the contents of the formula (19) is not clear and is difficult to analyse.

From the formula (19) we can also infer that if a natural implication of the first order is valid, then the corresponding material implication is always valid too, and if a material implication of the first order is valid, then the corresponding natural implication is not directly falsifiable. Hence, if a statement can be expressed without using implications of a higher order than

the first, we can replace a natural implication with the corresponding material implication.

As to the problem of disposition, we have observed that through the explicit definition which can be made by means of natural implication in some cases only the natural implication of the definiens becomes defined. The empirical contents of the formula are expressed by formulas, the contents of which are very close to the conditioned definition expressed by material implication. Hence from a positivistic point of view the material implication may have some advantages over the natural implication. This is due to the fact that a material implication means that the corresponding natural implication cannot be directly falsified.

It seems to me as if the knowledge of natural implication, outlined above, might be useful in the treatment of many logical and epistemological problems, especially the problem of induction. Unfortunately I now have no opportunity of continuing investigations in this direction.

Zur Psychologie des inneren Verhaltens beim Lernen, Denken und Erfahren.

Von

Lajos Székely.

1. Stellen wir uns den Verlauf eines Spieles zwischen zwei ausgesprochen guten Schachspielern vor. Ausser uns verfolgen drei Zuschauer den Kampf. Der erste unter ihnen ist ein Meister von Weltklasse, der zweite ist ein Anfänger, der von dem Schachspiel nicht viel mehr weiss als die Regeln, nach denen sich die einzelnen Figuren bewegen. Der dritte Zuschauer ist abermals ein ausgezeichneter Spieler, aber er kommt — sagen wir, vom Mond — und obwohl dort Schach mit genau solchen Figuren gespielt wird wie bei uns, jedoch nach etwas anderen Regeln. Der Turm läuft dort z. B. diagonal, der Läufer gerade, Königin und Springer haben gleichfalls veränderte Regeln und Rochade ist unbekannt. Wir setzen voraus, dass alle drei Zuschauer gleich intelligent und begabt seien; sie unterscheiden sich voneinander bloss durch ihre früheren Erfahrungen mit dem Schachspiel. Was geht in ihren Köpfen vor sich, während sie demselben Match zuschauen? *In der Auffassung des Meisterspielers* geht das Spiel *planmässig* vor sich und jede Konstellation hat eine bestimmte strategische *Bedeutung.* Die einzelnen Figuren stehen nicht zufällig verstreut auf ihren Plätzen; jede Figur hat eine bestimmte Funktion in dem Plan. Die einzelnen Schritte erfolgen sinnvoll und die sich allmählich verändernde, resp. einander ablösenden Konstellationen sind für ihn Stationen in der positiven oder negativen Entwicklung des Planes. Für den Meisterspieler *fordert* jede Kon-

stellation ganz bestimmte Schritte — und die Schritte, die die aktiven Spieler ausführen, erfasst er als zur Situation passend (mitunter am besten passend), oder als »schwach» (etwas anderes wäre besser gewesen), oder als »dumm», usw. Abgesehen von Abweichungen im Detail wird seine Auffassung mit denjenigen der aktiven Spieler übereinstimmen. An manchen Stellen hätte er vielleicht einen anderen konkreten Schritt unternommen als die Spieler, er hätte ein bestimmtes strategisches Problem anders gelöst und dadurch das Spiel anders geführt. Er erfasst, er versteht aber das sinnvolle Hervorwachsen des Kommenden aus dem vorher Dagewesenen. — *In der Auffassung des Anfängers sieht das Spiel ganz anders aus.* Von irgendeinem durchgehenden Plan, der seiner Verwirklichung bald näher, bald davon entfernter ist, ist keine Rede. Die Figuren stehen herum, aber die jeweilige Konstellation hat keine strategische Bedeutung. Die Figuren haben meistens keine spezifische Funktion innerhalb der jeweils gegenwärtigen Konstellation und die Konstellation ist kein Glied in der Entwicklung eines Generalplanes, resp. in dem Kampf um ihre Durchführung. Oft enthält irgendeine Konstellation auch für den Anfänger eine starke *Forderung* (einen bestimmten Schritt mit einer bestimmten Figur zu machen); z. B. einen Officier zu nehmen (oder umgekehrt, zu schützen). Er begreift nicht, warum der aktive Spieler diesen Schritt nicht ausführt? Erst beim zweiten, dritten darauffolgenden Schritt begreift er, dies wäre ein Fehler gewesen. Wenn so eine Forderung sich aus der Situation heraus entwickelt, so ist sie im Kopfe des Anfängers von der jeweils aktuell gegenwärtigen Lage abhängig und nicht von irgendeinem Generalplan. Der Anfänger sieht ganz andere Probleme, wie der Meisterspieler. Er denkt nicht in grossen Zusammenhängen: er überschaut nur »Augenblicksdetails». — Was erlebt schliesslich der *Besucher vom Mond?* Zunächst ist er ausserordentlich überrascht, und es scheint ihm völlig sinnlos, was vor seinen Augen vor sich geht. Bald erfasst er aber, dass hier die einzelnen Figuren sich nach anderen Regeln bewegen, als bei ihm zu Hause. Die einzelnen, aktuell gegenwärtigen Konstellationen haben auch für ihn eine strategische

Bedeutung und die einzelnen Figuren darin bestimmte Funktionen — aber andere, als in der Auffassung des irdischen Meisterspielers. Auch für den Mondbesucher enthalten die Konstellationen bestimmte Forderungen — aber andere. Wie eine Konstellation aus der vorher dagewesenen plötzlich entsteht, ist für ihn völlig unverständlich; es versetzt ihn jeweils in eine Ueberraschung. Immer wieder ist etwas Neues da, das man aus der vorherigen Lage nicht erwarten und damit in keine sinnvolle Verbindung bringen kann. Das ganze Spiel zerfällt in aufeinanderfolgende, unzusammenhängende Bilder, wie ein Fiebertraum. Obwohl er die Bewegungsregeln der irdischen Schachfiguren erfasst hat, denkt er voraus, gruppiert, bildet Zusammenhänge, sieht Probleme, wie sie nach den Regeln auf dem Mond sinnvoll entstehen.

Wir wollen nun einige Begriffe klären. Den Match, die räumliche Verteilung der Figuren nach den einzelnen Schritten, die aufeinanderfolgenden Konstellationen auf dem Schachbrett, usw. wollen wir das objektiv Gegebene, resp. das »*Geschehen in dem geometrischen Raum*» nennen. Dieses soll von dem »Geschehen in dem Verhaltensraum» streng getrennt werden. — Das Geschehen in dem geometrischen Raum formiert sich *in der Auffassung* der Zuschauer auf irgendeine Weise. Es entstehen in dem Verständnis (der Zuschauer) verschiedene Gruppenbildungen; manche Figuren gehören inniger zusammen als andere; Gewisse Spielfiguren bekommen irgendwelche funktionale Beziehungen, sog. strategische Stellenwerte in dem Verband umfassender Zusammenhänge, usw. Kurz gesagt, es entstehen bestimmte *Strukturen*, es organisiert sich etwas in der Auffassung. Diese entstehenden und sich verändernden Strukturen und die sie hervorbringenden Organisierungsprozesse sollen mit dem Ausdruck »*Geschehen in dem Verhaltensraum*» bezeichnet werden.

Wir sehen deutlich, dass das Geschehen in dem geometrischen Raum nicht identisch ist mit dem Geschehen in dem Verhaltensraum. Einem einzigen Geschehen in dem geometrischen Raum können nämlich in der Auffassung verschiedener Zuschauer verschiedene Geschehen in dem Verhaltensraum entsprechen. Zwi-

schen dem Geschehen in dem geometrischen und in dem Verhaltens-Raum besteht eine gewisse Abhängigkeitsbeziehung, diese ist aber nicht ein-eindeutig (im Sinne der Logistik). Psychologisch soll dies so ausgedrückt werden, dass das Geschehen in dem Verhaltensraum nicht ausschliesslich von dem Geschehen in dem geometrischen Raum, sondern auch von anderen Faktoren abhängig ist. In unserem Beispiel ist für die Differenzen bei den drei Zuschauern der Unterschied der früheren Erfahrungen verantwortlich

Unser Beispiel mit den drei Zuschauern ist nichts anderes als ein sehr vereinfachtes Modell des täglichen Lebens. Jedesmal begreifen wir auf irgendeine Weise die Situation, in der wir uns befinden. Wir sehen (und übersehen) gewisse Probleme, machen irgendwelche Ansätze zu ihrer Lösung, usw. Wie wir etwas sehen, wie wir etwas zu lösen versuchen, ist jedesmal unter vielen anderen Faktoren auch von unseren früheren Erfahrungen auf irgendeine Weise abhängig. — Diese Satz ist nicht neu, er ist vielmehr ein Gemeinplatz.

Blicken wir auf die Geschichte der Philosophie und Psychologie, so begegnen wir auch sehr häufig dem Begriff der Erfahrung. Sehen wir etwas genauer zu, so merken wir, dass der Erfahrungsbegriff in der Regel als Erklärungsprinzip dient, aber nur ganz selten zu einem Problem erhoben wird. Die Frage wird nicht gestellt, wie eine spezifische Erfahrung in einer bestimmten Situation sich formiert. (Vergl. z. B. Herings Theorie der Farben- und Helligkeitskonstanz der Sehdinge. Die Konstanz wird als Resultat früherer Erfahrungen erklärt, aber es wird nicht gefragt, worin diese früheren Erfahrungen bestanden haben.)

Das Problem der Erfahrung kann auf folgende Weise formuliert werden: 1. Was macht eine gegenwärtige Erfahrung aus: Das Geschehen in dem Verhaltensraum oder das Geschehen in dem geometrischen Raum? 2. Wovon geht die Erfahrungswirkung aus? Von dem Geschehen in dem Verhaltens- oder von dem Geschehen in dem geometrischen Raum? Wenn z. B. ein gegenwärtiges Verständnis für eine (aktuelle) Situation von

einer früheren Erfahrung abhängig ist, was war diese Erfahrung: das frühere Geschehen in dem Verhaltens- oder in dem geometrischen Raum? Die Frage ist ebenso dichotomisch, wenn die Wirkung einer gegenwärtigen Erfahrung für die Zukunft zum Problem gemacht wird. Mit den Begriffen der wissenschaftlichen Psychologie formuliert lautet das Problem: Wie werden Strukturen gebildet und wie ist eine, in einen bestimmten Zeitpunkt der individuellen Biographie vor sich gehende Strukturbildung von anderen und zu anderen Zeitpunkten gebildeten Strukturen abhängig?

Um das Problem wissenschaftlich behandeln zu können, sind die Beispiele aus dem alltäglichen Leben, selbst das vereinfachte Modell der Zuschauer beim Schachspiel, viel zu kompliziert und schwer überschaubar. Wir müssen uns an vereinfachte, experimentelle Modelle halten. Wesentlich dabei ist, dass das Modell alle relevanten Züge der Realität enthält. — Zunächst müssen wir aber an einigen konkreten Beispielen kennen lernen, was man unter Strukturbildung versteht, was in Wirklichkeit damit gemeint wird, wenn von der funktionellen Bedeutung eines Teils in einem umfassenderen Zusammenhang geredet wird. Bisher war von diesen Dingen bloss in grösster Allgemeinheit die Rede, und bei der Lektüre psychologischer Schriften hat man gar nicht den Eindruck, dass alle, die darüber schreiben, auch eine konkrete Vorstellung davon haben, was mit diesen Ausdrücken bezeichnet wird.

2. *Strukturbildung und Verständnisarbeit.*

Der Ausdruck »Struktur» kann Verschiedenes bezeichnen. Man kann mit diesem Wort z. B. die optisch wahrnehmbare geometrische Struktur einer Figur meinen, oder jene Struktur, die sich im Prozess der Verständnisarbeit in der Auffassung einer Person bildet. Dass diese beiden Strukturen (einer mit sich identisch bleibenden Figur) wirklich verschiedene Gegenstände sind, kann demonstriert werden. Man kann z. B. zeigen, dass eine Aufgabe — eine Denkaufgabe — in der Auffassung verschiedener Vpn sich zu verschiedenen Strukturen formiert; oder es kann gezeigt

werden, dass eine bestimmte Denkaufgabe in dem Verständnis derselben Vp nacheinander verschiedene Strukturen annimmt.

Nehmen wir als Beispiel ein Anordnungsproblem, das der Einfachheit halber als das 32-er Problem bezeichnet werden soll [1]. Vor der Vp liegen 32 Streichhölzer in einem Quadrat angeordnet. Je 4 Streichhölzer bilden eine Gruppe und jede Quadratseite wird aus 3 Gruppen, d. h. aus 12 Streichhölzern gebildet. Die Ausgangsanordnung der Aufgabe ist also die folgende:

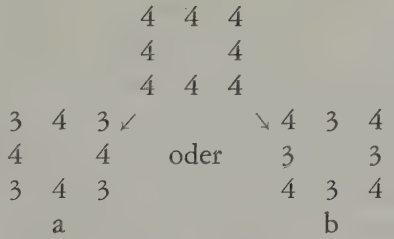
4 4 4
4 4
4 4 4

wobei jede Ziffer eine Gruppe mit der entsprechenden Anzahl von Streichhölzern bedeutet. Die Aufgabe besteht darin, 4 Streichhölzer aus dem Quadrat zu entfernen (ob eine Gruppe völlig liquidiert, oder die Anzahl in mehreren Gruppen reduziert wird, ist der Wahl der Vp überlassen) und von den übriggebliebenen 4 weitere so umzuordnen, dass am Ende der Procedur jede Quadratseite auch weiterhin aus je 12 Streichhölzern bestehen soll. (Bevor die Studie weiter gelesen wird, ist es empfehlenswert sich eine Zeitlang beim Problem aufzuhalten und zu versuchen, es zu lösen.) Vp A. J. beginnt damit, dass sie eine ganze Eckgruppe entfernt. Die Lösung gelingt nicht. Vp stellt die Ausgangsanordnung wieder her und entfernt eine andere Eckgruppe. Misslingen. Ausgangsanordnung wieder hergestellt. Vp entfernt eine mittlere Gruppe. Stellt Ausgangsanordnung wieder her und versucht aus verschiedenen Gruppen je 1 oder 2 Streichhölzer zu entfernen. — Vp B. T. beginnt ganz anders. Sie verhält sich erst still nachdenklich und beginnt dann laut zu überlegen: »Das ist sehr schwer, aber man kann jene Eigenschaft des Quadrates ausnützen, dass die Eckgruppen 2mal ausgenützt werden können.»

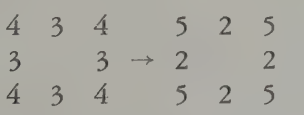
Die sprachliche Formulierung ist gewiss sehr unpräzis, aber es ist klar: die Vp hat entdeckt oder erfasst, worauf es bei der

[1] Einen Teil der Versuche hat fil. stud. Brita Nielse durchgeführt.

Lösung des Problems ankommt. Um dem Leser das Verständnis für die nächstfolgenden psychologischen Erörterungen zu erleichtern, soll nun das Problem hier erklärt werden. Die Lösung des Problems besteht darin, dass die Eckgruppen eine doppelte Funktion haben. Jedes Streichholz, das in einer Eckgruppe liegt, zählt doppelt: in einer vertikalen und in einer horizontalen Seite. Wenn 4 Streichhölzer entfernt wurden, sind bloss 28 übriggeblieben. Diese können nur dann ein Quadrat mit 12 Elementen an jeder Seite bilden, wenn die Reduktion der Gesamtsumme dadurch kompensiert wird, dass die Anzahl an den Ecken wächst. Es ist somit nicht gleichgültig, wo man die 4 Streichhölzer wegnimmt:



Bei a wurden von den 4 Ecken, bei b von den 4 mittleren Gruppen die Streichhölzer entfernt. Bei a befinden sich an jeder Seite bloss 10, bei b dagegen 11 Streichhölzer. Der gute Start ist b, a ist der schlechte Start. Lösung von b aus:



d. h. von den mittleren Gruppen werden 4 Streichhölzer an die Ecken verschoben, und nun haben wir wieder ein Quadrat mit je 12 Elementen an jeder Seite. (Endanordnung.)

Nach dieser Exkursion kehren wir zu den beiden Vpn zurück und fragen: was ist der Unterschied zwischen beiden?

In dem primären Verständnis der Vp A. J. sind alle Gruppen funktionell gleichwertig: das Anordnungsproblem hat eine *homogene* — oder vielleicht richtiger gesagt — *diffuse Struktur*.

Darum macht sie den »blinden», »uneinsichtigen» Versuch: einmal liquidiert sie die eine Ecke, nächstesmal die andere Ecke (als wenn das zu einem anderen Resultat führen könnte?). Ihr Verhalten gleicht der blinden Gehorsamkeit eines Kindes auf der magischen Denkstufe: »ich begreife zwar keinen Unterschied, aber vielleicht wird es dem Papa (Mama) so besser gefallen und belohnen». Kein seltenes Verhalten bei denkpsychologischen Versuchen. Bloss nebenbei soll in diesem Zusammenhang hinzugefügt werden, dass zwischen Einsichtslosigkeit und blindem Gehorsam eine Verwandtschaft besteht. Wir alle neigen dazu, angesichts von Aufgaben, die zu schwer sind und die wir nicht verständig erfassen, eine Reaktionsweise zu entwickeln, die nach dem Muster des blind gehorsamen Kindes beschaffen ist. Umgekehrt: Menschen, deren Charakter in stärkerem Masse nach dem Gehorsamkeitsmuster formiert ist, entwickeln wenig Initiative in dem selbständigen Erfassen.

Für die Vp B. T. dagegen besteht das 32-er Problem aus funktionell verschiedenwertigen Gruppen. Die Eckgruppen haben eine doppelte Funktion, die mittleren Gruppen nicht. Die Anordnung ist in ihrer Auffassung auf irgendeine Weise funktionell gegliedert; sie ist nicht homogen.

Wir sehen also: *dieselbe Aufgabe, dieselbe optisch-geometrische Anordnung kann für verschiedene Vpn verschiedene Strukturen haben.* Was für eine Struktur die Aufgabe für eine Vp hat, ist von der *psychischen Verarbeitung* abhängig und ist nicht im Aussenraum fertig vorgegeben, etwa dort, am Tisch, wo die Streichhölzer liegen. Die psychische Verarbeitung wollen wir als »*Verständnisarbeit*» bezeichnen: in der Alltagssprache wird sie als »Verstehen», »Einsicht», »Begreifen», »Auffassen», usw. bezeichnet.

In der folgenden Darstellung soll mit dem Ausdruck Struktur immer etwas gemeint werden, das im Prozess einer psychischen Arbeit (z. B. der Verständnisarbeit) sich formiert und nicht etwas, das fertig vorgegeben ist. Im letzteren Fall sollen Ausdrücke wie »Anordnung», »Konfiguration», usw. angewendet werden.

3. *Strukturbildung und Lösungsarbeit.*

Es gehört zu den Seltenheiten, dass eine so schwere Strukturbildung wie das Erfassen der doppelten Funktion bei der 32-er Aufgabe momentan zustandekommt. In der Mehrzahl der Fälle gehen dieser Entdeckung eine Reihe mehr oder weniger »blinder« oder »uneinsichtiger« Probehandlungen (trial-and-error) voraus. Bevor die Vp die Aufgabe löst, d. h. die Anfangsstruktur in die Endstruktur überführt, hat die Aufgabe in ihrer Auffassung sukzessiv verschiedene Strukturen. Das Entstehen einer Struktur aus einer anderen wird als *Umstrukturierung* bezeichnet: die Lösung eines Problems ist in der Mehrzahl der Fälle das Ergebnis einer Serie von Umstrukturierungen. Die dabei geleistete Arbeit soll Lösungsarbeit genannt werden.

Der Ausdruck »Umstrukturierung« kann verschiedene Hergänge bezeichnen. Man kann mit diesem Wort z. B. die Umlagerung der Streichhölzer auf dem Tisch, oder die Veränderung in der Bedeutung und der Funktionen meinen, die die Teile einer Figur im Zusammenhange der ganzen Figur *in der Auffassung der Vp* erleiden. Dass diese beiden Umstrukturierungen wirklich verschiedene Geschehnisse sind, kann experimentell demonstriert werden. Wir werden im folgenden an einigen Versuchsprotokollen zeigen, dass in dem Kopf verschiedener Vpn, obwohl sie die Streichhölzer im Prozess der Lösungsarbeit am Tisch auf die gleiche Weise umlagern, dennoch verschiedene Umstrukturierungen sich abspielen, d. h. die verschiedenen Teile der Figur in den Auffassungen verschiedener Vpn verschiedene funktionelle Beziehungen zum Ganzen haben. Als Beispiele nehmen wir einige Lösungsprotokolle der 32-er Aufgabe.

Vor Vp M. H. liegt die Ausgangsanordnung:

4 4 4
4 4
4 4 4

Vp: »ühüm, das ist aber nicht ganz klar. Ich nehme erst

1. diese vier:

4 3 4
3 3
4 3 4

»wenn die Seiten die gleiche Anzahl Hölzer enthalten sollen, muss man nach einem einheitlichen Prinzip vorgehen». — »Sollen jetzt unter den zurückgebliebenen 4 umplaciert werden?» (Vl: ja) »Und dann sollen wieder 12 sein auf jeder Seite?» (Vl: ja).

2.

4 4 3
3 3
4 3 4

Vp zählt ab die Anzahl an den Seiten: »Nein, das geht nicht, da bloss 10».

3. Vp verlagert:

5 2 5
2 2
5 2 5

Vp zählt ab: »so, das geht».

M. H. hat die Aufgabe gelöst: Die Ausgangsanordnung wurde in die Endanordnung überführt. Hat sie die Aufgabe aber wirklich, »einsichtig» gelöst? Hat sich in ihrem Kopf wirklich die richtige »Umstrukturierung» abgespielt?. Vp wird geprüft: (Vl: »was ist das Prinzip der Lösung?») Vp: »An einer Stelle gleichmässig wegnehmen, an anderer Stelle gleichmässig zulegen» Vl zerstört die Anordnung und fragt: Wo wegnehmen, wo zulegen? Vp: »Das weiss ich nicht, sicher ist bloss, dass es gleichmässig gemacht wird». Vl schlägt vor: Wiederholen wir es.

Zweiter Versuch:

4 4 4
4 4
4 4 4

1.

3 4 3
4 4
3 4 3

Vp zählt ab: »nein, das geht nicht . . . aha!! wichtig, dass die Grössenzahl an den Ecken konzentriert ist, um die Seitensumme zu erhöhen . . . wenn ich sie an den Mittenstellen konzentriere, so werden sie zu wenig». Nun geht die Lösung sofort.

Kommentar zum Versuch. Eine »trial-and-error» Lösung im klassischen Sinne war dieser Versuch nicht, denn die Vp hatte schon von Anbeginn einen *Generalplan*: *»Einheitlich vorgehen»* (d. h. die Symmetrie der Figur erhalten. Wenn ein Schritt die Symmetrie der Figur stört, muss der nächste Schritt so gewählt werden, dass die Symmetrie wieder hergestellt wird). Aber selbst als die Vp die erste richtige Lösung produziert hat, hatten die Eckstellen für sie noch keine doppelte Funktion. Die Gruppen waren noch fortdauernd funktionell gleichwertig. Ihre Funktion bestand in ihrem Verhältnis zu den Symmetrieebenen: die einander gegenüberliegenden Gruppen sollen einander das Gleichgewicht halten. »Wegnahme von den Ecken» oder »Wegnahme von den mittleren Stellen» waren in der Auffassung der Vp funktionell gleichwertige Schritte. Bei Wiederholung des Versuches gelang die Lösung nicht sofort; die Vp machte bei der Wegnahme der 4 Hölzer einen Fehler. Genauer besehen war dieser Fehler aber ein *»sinnvoller»* Fehler. Hat nähmlich die früher gemachte *Umordnung* der Streichhölzer

$$\begin{array}{ccc} 4 & 4 & 4 \\ 4 & & 4 \\ 4 & 4 & 4 \end{array} \quad \rightarrow \quad \begin{array}{ccc} 5 & 2 & 5 \\ 2 & & 2 \\ 5 & 2 & 5 \end{array}$$

in der Auffassung der Vp die Struktur: »gleichmässig vorgehen = Symmetrie bewahren», *dann* ist ihr Beginn gemäss dieser Struktur sinnvoll. In dieser Struktur haben die Eckstellen dieselbe Funktion wie die mittleren Stellen. Reduktion an den Ecken oder an den mittleren Stellen hat dieselbe Bedeutung.

Die praktische Durchführung des Versuches veranlasst bei der Vp eine *Umstrukturierung*: die Gruppen werden funktionell verschiedenwertig, die doppelte Funktion der Eckstellen wird entdeckt. — Dieser Versuch zeigt, dass aus der Art, wie eine Vp

die Streichhölzer auf dem Tisch umgruppiert, noch keine Schlüsse auf die erfolgte *Umstrukturierung in dem Verhaltensraum* gemacht werden können. Derselben Umgruppierung auf dem Tisch können verschiedene Umstrukturierungen zugeordnet werden [1]. Erst die Wiederholung oder die geeignete Variation der Versuchsbedingungen lässt erkennen, welche Umstrukturierung in dem Verhaltensraum sich eigentlich abgespielt hat.

Wie hochgradig variabel das innere Verhalten bei verschiedenen Vpn trotz gleichen äusseren Verhaltens sein kann, zeigt sich für einen Forscher erst dann, wenn er längere Zeit mit denselben Problemaufgaben experimentiert und sinnvolle Änderungen der Versuchsbedingungen eingeführt hat. Um einen ungefähren Eindruck von dieser Variabilität zu vermitteln, sollen zwei typische Problemlösungen gewählt werden, wobei der Hergang etwas schematisiert wird, um die Darstellung zu verkürzen. — Wir behandeln gleichzeitig die Protokolle der Vpn K. und P.

1. Der erste Schritt besteht bei beiden in der Entfernung von 4 Elementen von den 4 Eckstellen:

```
4 4 4      3 4 3
4   4  →   4   4
4 4 4      3 4 3
```

Es zeigt sich für beide, dass der Start unrichtig war, und sie stellen die Ausgangsanordnung wieder her. Nun beginnen sie »anders» und entfernen von den mittleren Stellen:

```
4 4 4      4 3 4
4   4  →   3   3
4 4 4      4 3 4
```

Die Seiten werden abgezählt und konstatiert: »jetzt ist es *besser*: es gibt 11 an jeder Seite, vorher gab es nur 10».

[1] Vergl. die Analyse des Problems bei H. Siegvald, »Experimentella undersökningar rörande intellektuella könsdifferenser». Lund, 1944, Bd. I. S. 391.

2. Als nächsten Schritt verschieben beide Vpn zwei Elemente von der Mitte an die Ecken

4	3	4		5	3	4
3		3	→	2		2
4	3	4		4	3	5

Es wird abgezählt und konstatiert: so und so (horizontal) schon 12, so und so (vertikal) bloss 11. — Der weitere Verlauf ist bei den beiden Vpn verschieden.

3. Vp K. verschiebt zwei Elemente in den horizontalen Reihen und erhält aus

5	3	4		5	2	5
2		2	→	2		2
4	3	5		5	2	5

Vp P. verschiebt ein Element wieder in einer *vertikalen* Reihe und erhält aus

5	3	4		5	3	4
2		2	→	1		2
4	3	5		5	3	5

Zählt ab und stellt fest: hier 13, hier 12, hier und hier 11. Danach probiert P. alle Möglichkeiten aus, ein Element innerhalb der *vertikalen* Reihen zu verschieben und *macht keinen Versuch, innerhalb der horizontalen Reihen ein Element zu displacieren.* Sie ist »hängengeblieben».

Kommentar zu dem Versuch. Der Start — die Entfernung der 4 Streichhölzer — erfolgte bei beiden Vpn nach dem Generalplan des symmetrischen Vorgehens (wie bei M. H.) und die beiden Alternativmöglichkeiten, die dieser Plan zulässt, werden nacheinander durchprobiert. — 2ter Schritt. Als sie nach der Wegnahme von den mittleren Gruppen bemerken »jetzt ist es *besser*» ist es noch keinem ganz klar, worauf das beruht. Es ist ein »Gefühl», das sie haben. Die erhaltene Anordnung hat die »Qualität» besser. Ahnen die Vpn aber, wodurch diese Qualität

entsteht? Fühlen sie es schon, dass das mit der »Lage», resp. mit der Funktion der Eckstellen zusammenhängt? — 3ter Schritt. Für Vp K. beginnt die besondere Funktion der Eckstellen aufzugehen; die Gruppen sind nicht mehr gleichwertig. Den dritten Schritt unternimmt sie aber rein nach dem Plan: »Symmetrie bewahren». Vorher hat sie 2 Elemente in den vertikalen Reihen verschoben, jetzt verschiebt sie 2 Elemente in den horizontalen Reihen. Erst als die Lösung fertig vor ihr auf dem Tisch liegt und sie das Prinzip formulieren soll, entdeckt sie das Prinzip: »was an der Ecke liegt, zählt doppelt». Für Vp P. hat die Konfiguration

5 3 4
2 2
4 3 5

eine ganz andere Struktur als für Vp K. Als sie die Anzahl der Elemente in den Reihen abzählt und konstatiert hier und hier schon 12, hier und hier bloss 11, differenziert sich die Anordnung so »*hier und hier* (= *horizontal*) *schon fertig, hier und hier* (= *vertikal*) *noch nicht fertig*». Fertig und nicht-fertig sind keine verbal formulierten Urteile, sondern »Qualitäten», »Bewertungen» die als solche den Reihen »anhaften». Bei den darauf folgenden Operationen werden die fertigen Reihen nicht mehr verändert und Vp P. beschränkt ihre Operationen auf die unfertigen Reihen. Erhält dabei eine Reihe 13 Elemente, so ist dies eine »Verschlechterung», denn die Reihe war vorher schon fertig, hatte 12 Elemente. Sie arbeitet nach rein »*qualitativen Signalen*» »fertig», »unfertig», »schlechter», »besser», und ist bestrebt, nicht innerhalb einer fertigen Reihe zu verschieben. Bloss innerhalb einer unfertigen, d. h. vertikalen Reihe darf etwas umplaciert werden. Kurz: P. arbeitet »*stückhaft*». Teile haben die Eigenschaften: fertig, unfertig. Ob etwas fertig oder unfertig ist, beruht in ihrer Auffassung nicht auf der Funktion gewisser Teile (der Eckstellen) innerhalb der ganzen Anordnung. Den Positionseffekt der Eckstellen hat sie nicht erfasst.

Wir sehen also, den gleichen räumlichen Verschiebungen der Streichhölzer, können verschiedene Umstrukturierungen in dem Verhaltensraum entsprechen. *Mit dem Ausdruck Umstrukturierung soll in der folgenden Darstellung immer ein Geschehen in dem Verhaltensraum, z. B. eine Bedeutungs-, Funktions-Akzentänderung* und nicht eine räumliche Lageänderung verstanden werden.

Die begrifflich klare Scheidung zwischen Veränderung in dem geometrischen (oder geographischen) Raum und Veränderung in dem Verhaltensraum — die schon Koffka durchgeführt hat [1] — ist für die Theorie des Lernens und des Erfahrens von grundlegender Bedeutung. Wir müssen nämlich fragen: was wird erlernt: eine Veränderung in dem Verhaltens-, oder eine in dem geographischen (geometrischen) Raum?

Wir müssen uns ferner die Frage mit voller Stringenz vorlegen: *Worin besteht eigentlich unsere Erfahrung: Besteht sie in dem Geschehen (Veränderung), das sich in dem geometrischen Raum abspielt, oder besteht unsere Erfahrung in der Strukturbildung, die unsere Auffassungsarbeit aus dem objektiven Geschehen macht?*

4. *Der strukturelle und der historische Aspekt beim Lernen und Denken.*

Wenn der routinierte Schachspieler eine strategische Lage besser »versteht» oder eine Aufgabe besser »löst» als ein Anfänger, so haben wir es mit der Wirkung früherer Erfahrungen (resp. Lernens) zu tun.

Wenn der Schachspieler eine neue Aufgabe, die in seiner individuellen Erfahrung nie vorher dagewesen war, zum erstenmal löst, oder eine bekannte Aufgabe auf eine völlig neue, originelle Weise löst, so hat er etwas Neues, Originelles, für ihn vorher nie Dagewesenes produziert. Ebenso der (passive) Zuschauer, dem der Sinn eines Spieles plötzlich aufgeht; der nach einem Zug so etwas wie eine strategische Konstellation erfasst und ahnt, was

[1] K. Koffka, Principles of Gestaltpsychology. London, Kegan, 1935.

ein Spieler im »Schilde führt», worauf seine Pläne hinausgehen, in dessen Auffassung entsteht auch etwas Neues — in Kontradistinktion zu einem anderen Zuschauer, der nichts begreift. *Wie entsteht das Neue?* Das ist das Grundproblem der modernen Denkpsychologie.

Verstehen und Problemlösen (= die Entstehung des Neuen) — und Erfahrungswirkung stehen in einem sehr komplizierten Verhältnis zueinander, und ihre Beziehungen sind prinzipiell noch gar nicht geklärt. Manche Richtungen leugnen direkt, dass etwas prinzipiell Neues entstehen könnte. Das — scheinbar Neue und Originelle — sei bloss die Neukombination alter Elemente oder beruhe auf dem Transfer alter Verhaltungsweisen auf eine neue Aufgabe. Andere Richtungen erkennen die Entstehung des Neuen an. Diese Richtungen haben die Tendenz, die Entstehungsbedingungen des Neuen mit völlig ahistorischen Begriffen festzulegen [1]. — Beide Richtungen ignorieren etwas, oder haben zumindest die Tendenz, etwas zu verleugnen. Die erste begnügt sich damit, die historische Kontinuität zwischen dem neuen (für sie nur scheinbar neuen) aktuellen Verhalten und der individuellen Lebensgeschichte (frühere Erfahrungen) aufzudecken. Ist das gelungen, so ist sie theoretisch zufriedengestellt, und weitere Probleme gibt es für sie nicht. Die andere Richtung dagegen begnügt sich damit, das Entstehen neuer Strukturen, die Prozesse der Umstrukturierung festzulegen und fragt nicht danach, ob das gegenwärtige Geschehen von früherem Geschehen abhängig sei.

Die moderne Psychologie entwickelt also zwei methodische Linien zur Lösung des Problems, wie das — wirklich oder bloss scheinbar — Neue entsteht. Jeder von ihnen ist eine gewisse theoretische Grundposition zugeordnet. Die eine versucht das Problem von dem *strukturellen*, die andere von dem *historischen Aspekt* her zu lösen.

Was verstehen wir unter dem *strukturellen Aspekt?* Wir vergleichen z. B. die Lösung des 32-Problems mit der Lösung einer anderen Anordnungsaufgabe, die als 9-er Problem bezeichnet

[1] Vergl. meinen Beitrag »Tankepsykologi» in Psykologisk-pedagogisk Uppslagsbok, Bd. III. S. 1801 u. ff.

werden soll. (Das 9-er Problem wurde in meinem Aufsatz: Die Bedeutung der Situation für das Denken, Theoria, 9, 1943, S. 6—8 ausführlich beschrieben, aus diesem Grund kann seine Beschreibung hier ganz kurz gefasst werden.)

Das Problem ist:

3 zusätzliche Streichhölzer sollen auf eine solche Weise hinzugelegt werden, dass die Anzahl der Elemente in jeder Reihe horizontal und vertikal 4 sein soll. Die Crux dieses Problems ist zu entdecken, dass die »doppelte Funktion» der Stellen ausnützbar ist. Lösung:

Wir finden nun, dass das 9-er Problem viel schwerer zu lösen ist als das 32-er Problem.

Lösungsfrequenz.

9-er Problem	(Anzahl Vpn:	100)	gelöst	von	25 %
32-er »	»	59	»	»	62 »

Wovon hängt der Unterschied bei der Lösungsfrequenz (und Lösungsschwierigkeit) ab? Bei dem 9-er Problem haben im Prinzip alle Stellen eine doppelte Funktion, bei dem 32-er Problem alternieren die Stellen mit doppelter und mit einfacher Funktion. Während der Arbeit können sich die Stellen mit verschiedener Funktion voneinander absondern, die Ecken sondern sich auf Grund des Unterschiedes leicht heraus.

Dieser Vergleich der beiden Aufgaben weist auf den *strukturellen Aspekt* der denkpsychologischen Forschung hin. Durch intensives Experimentieren mit verschiedenerlei Aufgaben können die Bedingungen aufgefunden werden, von denen die Leich-

tigkeit (Schwierigkeit) der Umstrukturierung abhängt. Das könnte die Formulierung von Gesetzmässigkeiten der Lösungsarbeit und der Verständnisarbeit ermöglichen. (Einstweilen sind wir von diesem Ziel aber noch sehr weit entfernt.)

Wir machen nun folgende Beobachtungen: Von 27 Vpn, die das 32-er Problem mit Verständnis gelöst haben, haben später 25 beim Lösen des 9-er Problems das Prinzip der doppelten Funktion angewandt. Wir teilen nun eine Anzahl von Vpn in zwei Gruppen: A und B. Gruppe A bekommt die beiden Probleme in folgender Sequenz: erst 9-er, später 32-er Problem. Gruppe B erhält die beiden Aufgaben in der umgekehrten Reihenfolge. In der Gruppe A wird das Prinzip der doppelten Funktion bei der Lösung des 9-er Problems viel seltener angewandt als in der Gruppe B.

Frequenz für die Anwendung des Prinzips der doppelten Funktion.

Gruppe A (Anzahl der Vp = 14) bei 36 %
» B (» » » = 27) » 92 »

Wir können unsere Ergebnisse auf zwei verschiedene Weise formulieren. (Beide sind gleich korrekt.) Die erste: Die häufigere Lösung des 32-er, die seltenere Lösung des 9-er Problems ist von dem relativen Schwierigkeitsgrad der Umorganisierungsprozesse abhängig. Wir fügen eine Strukturanalyse der Probleme hinzu und zeigen, dass ein solcher Befund zu erwarten war, d. h. aus den allgemeinen Sätzen der Lösungsarbeit deduziert werden konnte. So *erklären wir das Verhalten der Vpn von dem strukturellen Gesichtspunkt.* Es werden Aussagen über die strukturelle, jedoch nicht über die historische Beziehung der beiden Problemlösungen gemacht. Wir machen ferner Feststellungen über die Abhängigkeit des inneren Geschehens (Umstrukturierung) von den Besonderheiten der äusseren Verhältnisse, Reizkonstellation, usw. und behandeln die Frage völlig ahistorisch. Formulieren wir unsere Beobachtungen jedoch so: Der Unterschied der Lösungsfrequenz des 9-er Problems zwischen den

Gruppen A und B ist von dem Unterschied der früheren Erfahrungen abhängig. Gruppe B hat das 32-er Problem vor dem 9-er Problem bereits gelöst und übertrug das Prinzip der doppelten Funktion von dem 32-er auf das 9-er Problem, so stellen wir zwischen den beiden Problemlösungen eine *historische Beziehung her.* Wir geben eine *Erklärung vom historischen Aspekt* aus, indem wir Aussagen über die Abhängigkeit des aktuellen Verhaltens (Lösung des 9-er Problems) von der individuellen Vergangenheit resp. von den früheren Erfahrungen (Lösung des 32-er Problems) machen. Diese Betrachtungsweise stellt die Kontinuität zwischen dem aktuellen Verhalten und der individuellen Biographie in den Vordergrund.

Beide Aspekte sind von prinzipieller Bedeutung. In der Psychologie herrscht jedoch eine grosse Verwirrung über die Gültigkeit der beiden Aspekte, und es ist nicht geklärt, in welcher Beziehung die beiden zueinander stehen. Im Allgemeinen betrachtet man die beiden gar nicht als zwei Erklärungsprinzipien, sondern als zwei, sich gegenseitig ausschliessende Hypothesen. Man stellt z. B. die Hypothese auf, dass unmittelbare Problemlösungen die Funktion des Transfers früherer Erfahrungen seien, und ignoriert, dass auf alle Fälle soetwas wie eine Strukturbildung resp. Umstrukturierung sich dabei abspielt. Kurz, die Stellung des strukturellen Momentes in dem Erfahrungsproblem ist prinzipiell noch nicht genügend geklärt.

5. *Der Platz des strukturellen Aspektes beim Erfahrungsproblem.*

Zur Verdeutlichung des Problems soll ein Tierversuch dienen. Im Laufe einer Trainingsperiode erlernt eine Gruppe von Ratten eine bestimmte Wahl zu treffen. Zwischen zwei weissen Karten, von denen die eine mit einem schwarzen Kreis von 6 cm und die andere mit einem schwarzen Kreis von 3 cm Diameter versehen ist, erlernen die Versuchstiere die Karte mit 6 cm Kreis zu wählen. Nach abgeschlossener Lernperiode folgt der kritische Wahlversuch. Es werden wieder zwei weisse Karten geboten, von denen die eine mit einem schwarzen Kreis von 6, die andere

mit einem schwarzen Kreis von 12 cm Diameter versehen ist. Die Wahl fällt auf die Karte mit 12 cm Kreis. Der Schluss scheint auf der Hand zu liegen: Das »einsichtige», d.h. keines Neulernens bedürftige Verhalten in dem kritischen Wahlversuch beruhe auf dem Transfer der während der Dressurperiode gemachten Erfahrung. Damals lernten die Tiere den »grösseren» Kreis zu wählen, und *deshalb* wählen sie in dem kritischen Versuch zwischen den neuen Kreisen wieder den grösseren.

So einfach ist der Tatbestand aber noch lange nicht. Wir wissen gar nicht, *was* die Ratten eigentlich erfahren bzw. erlernt und *was* sie im kritischen Versuch transferiert haben. Die Reizkonfiguration während der Lernperiode hat nähmlich zwei Aspekte. Die weisse Karte mit dem schwarzen Kreis von 6 cm ist einerseits mit dem *grösseren* Kreis versehen, sie wirkt andererseits *dunkler*. Die Gesamtfläche der weissen Karte mit einem 6 cm grossen schwarzen Kreis reflektiert weniger Licht als die gleiche Karte mit dem 3 cm Kreis. Was haben die Versuchstiere erfahren: die positive Reaktion auf »grösser» oder auf »dunkler»? Der kritische Wahlversuch lässt keine Entscheidung zu. Die Tiere wählen die Karte mit dem 12 cm Kreis. Die Grundlage ihrer Wahl aber kann sowohl die Qualität »grösser», als die Qualität »dunkler» sein. Zur Entscheidung muss die Reaktion auf »grösser» von der Reaktion auf »dunkler» durch einen neuen Wahlversuch isoliert werden. In dem neuen Wahlversuch erscheinen auf schwarzen Karten weisse Kreise von 3 cm bzw. von 6 cm Durchmesser. Hat eine Ratte während der Trainingsperiode die Wahl »grösser» erlernt, wird sie die Karte mit 6 cm grossen Kreis, hat sie aber die Wahl »dunkler» erlernt, wird sie die Karte mit dem 3 cm grossen Kreis bevorzugen. N. R. F. Maier's Versuche [1] ergaben, dass ein Teil der Versuchstiere konstant »grösser», ein anderer Teil konstant »dunkler» wählt. *In einer konstant gehaltenen Lernsituation haben die verschiedenen Individuen somit verschiedene »Erfahrungen» gemacht*, sie haben verschiedene Verhaltungsweisen erlernt. Der erste Wahlversuch

[1] N. R. F. Maier: Reasoning in Humans III. The mechanismus of equivalent stimuli and of reasoning. Journ. of Exp. Psychol. 35., 349—360. 1945.

repräsentierte für die Individuen verschiedene Probleme und sie haben bei der Lösung des Problems verschiedenes transferiert. Das — äusserlich — gleiche Verhalten liess die Differenzen des inneren Geschehens aber nicht sichtbar werden. Die Unterschiede traten erst beim zweiten Wahlversuch hervor.

Das Problem des Erfahrens ist: Zu was für einer Erfahrung eine bestimmte Situation sich formiert? Wie sind die Strukturen beschaffen, die sich bilden? Gewöhnlicherweise wird dieses Problem ignoriert. Man beschreibt die äussere Reizkonstellation oder das Ereignis in dem guten Glauben, damit *die* spezifische Erfahrung festgelegt zu haben, welche die daran beteiligten Individuen machen. Wir sehen nun klar: *Das, was eine Erfahrung ausmacht, ist eine Veränderung in dem Verhaltensraum und nicht eine Veränderung in dem geometrischen (resp. geographischen) Raum.*

So sehen wir: auch dann, wenn wir ein aktuelles Verhalten unter dem historischen Gesichtspunkt untersuchen, indem wir seine Abhängigkeit von etwas früher Dagewesenem aufzuweisen suchen, um den strukturellen Aspekt kommen wir nicht herum. Denn wir können erst vermittels einer Analyse von dem strukturellen Aspekt her wissenschaftlich festlegen, was dieses früher Dagewesene, was jene Erfahrung eigentlich war.

6. *Der Platz des historischen Aspektes beim Problem der »Entstehung des Neuen«.*

Wir entnehmen einige Resultate einer noch nicht abgeschlossenen experimentellen Untersuchung. Die Frage ist, auf welche Weise das Lösen von neuartigen Aufgaben von früheren Erfahrungen abhängig sei. Die Vpn bekamen sehr schwere Denkprobleme, zu deren Lösung man einen wirklich originellen Einfall produzieren musste. Die Probleme waren ferner so beschaffen, dass man auf den Einfall nur dann kommen konnte, wenn man über ein gewisses Wissen verfügt, d. h. früher gewisse Erfahrungen gemacht hat. Als Vpn wurden solche Individuen ausgewählt, die vor dem Versuch nicht im Besitz des zureichenden Wissens waren und erst im Verlauf der Versuche un-

ter experimentell kontrollierten und methodisch variierten Bedingungen die zur Problemlösung notwendigen Erfahrungen gemacht haben.

Eine erste Versuchsserie wurde auf die folgende Weise durchgeführt: Die Vpn erhielten einen Text von 4 maschinengeschriebenen Seiten mit dem Auftrag, dessen Inhalt zu erlernen (nicht auswendig, sondern mit Verständnis). Für einige Tage später wurde eine zweite Sitzung anberaumt, um prüfen zu können, wie viel man von dem Gelernten noch behalten hat. Der Text enthielt einige Kapitel aus der Mechanik, und zw. über Arbeit, Energie, Impuls, Drehmoment, Trägheitsmoment, Drehimpuls. Zur Veranschaulichung des Gelernten hat der Versuchsleiter (Vl) einige Demonstrationen ausgeführt. Trägheitsmoment wurde z. B. mit Hilfe eines einfachen *Torsionspendels* demonstriert. Der Torsionspendel bestand aus einem Stab, der in der Mitte an einem Faden in Gleichgewichtslage aufgehängt war. Der Faden wurde gedreht, so dass der losgelassene Torsionspendel sich zurückdrehen konnte. Nun waren am Pendel zwei Paar Haken symmetrisch angebracht: ein Paar davon ganz nahe an der Drehachse, ein Paar ganz nahe an den Enden. Ein Paar relativ schwere (und gleiche) Gewichte wurden an den Haken angehängt. Hingen die Gewichte innen (nahe der Achse), war die Drehgeschwindigkeit relativ gross, hingen die Gewichte aussen (an den beiden Enden) war die Geschwindigkeit sehr gering, weil das Trägheitsmoment auf das vielfache gestiegen war. — Die Frage ist nun, ob und auf welche Weise das auf diese Weise erworbene Wissen später einmal beim neuschöpferischen Denken verwendet werden kann. Kann dieses Wissen bei der Produktion eines »schöpferischen Einfalles» in dem Prozess eines Lösungsgeschehens eine Funktion erfüllen? Um das zu prüfen, bekamen die Vpn einige Tage später eine Reihe verschiedener Denkprobleme. Unter diesen gab es zwei, die nur dann lösbar waren, wenn man das Wissen um das Trägheitsmoment auf eine originelle Weise angewendet hat. Die Vpn waren über den Zweck der Versuche nicht unterrichtet; sie wussten auch nicht, dass die Denkversuche mit dem früher stattgehabten Lernversuch etwas zu tun haben. Die hier

relevanten Denkaufgaben waren das *Zwei-Kugel-* und das *Zwei-Prismen-Problem.*

Die *2-Kugel-Aufgabe* lautet: Wir haben zwei Kugeln von genau gleicher Grösse, gleichem Gewicht und gleichem Aussehen. Sie bestehen aber aus ungleichem Material; die eine aus einem sehr schweren, die andere aus einem sehr leichten Metall. Wie können sie dennoch gleich gross und gleich schwer sein? Antwort: Die Schwermetallkugel ist innen hohl, die andere ist massiv (kompakt). Frage: Wie kann man ohne Hilfsmittel feststellen, welche von den beiden die Hohl-, und welche die massive Kugel sei? Lösung: Lässt man beide an einer schiefen Ebene herabrollen, ist die Geschwindigkeit (und die Beschleunigung) der Hohlkugel geringer, weil ihr Trägheitsmoment grösser ist. Das *2-Prismen-Problem* hatte den gleichen Wortlaut mit dem Unterschied, dass zur Bestimmung, welcher das hohle, resp. das massive Prisma sei, zwei Schnüre als Hilfsmittel verwendet werden durften. Lösung: Hängt man beide Prismen mit Hilfe der Schnüre in horizontaler Lage auf und lässt sie rotieren (d. h. man macht aus ihnen zwei Torsionspendel), ist die Beschleunigung des Hohlprismas geringer, weil sein Trägheitsmoment grösser ist.

Von 17 Vpn hat die 2-Kugel-Aufg. 1 gelöst, dagegen die 2-Prismen-Aufg. 6 gelöst.

Die 2-Prismen-Aufg. ist also leichter. Wir haben auch eine Vermutung, worauf ihre leichtere Lösbarkeit beruhen könnte. Die Prismen haben eine grössere Ähnlichkeit mit dem Lernmodell, d. h. mit dem Torsionspendel, als die Kugeln. Um die Richtigkeit dieser Annahme experimentell zu prüfen, wurde eine zweite Versuchsserie arrangiert. In dieser diente als Modell zur Demonstration des Trägheitsmomentes eine Anordnung, die den Kugeln mehr, den Prismen weniger ähnlich war. Falls unsere Annahme richtig ist, sollte jetzt eine höhere Lösungsfrequenz für die 2-Kugel-Aufgabe erwartet werden. — Als Modell diente eine rollende Scheibe, die an der Peripherie, und nahe der Drehachse, mit je 4—4 Hohlräumen versehen war, in die man Metallkörper

hineinlegen konnte. Lagen die 4 Metallkörper aussen, so war das Trägheitsmoment grösser und die Beschleunigung der Scheibe geringer. Sonst wurde der Versuch genau so durchgeführt wie bei der ersten Serie. Die Vpn lernten denselben Text. Ergebnis:

Von 17 Vpn haben die 2-Kugel-Aufg 13 Vpn gelöst,
die 2-Prismen-Aufg. 5 Vpn gelöst.

Nun ist die Kugelaufgabe die leichter lösbare. Das Lösbarkeitsverhältnis, das zwischen zwei Denkproblemen besteht, ist nicht allein von dem Strukturverhältnis abhängig, in welchem diese zueinander stehen, sondern hängt auch von dem Strukturverhältnis ab, das zwischen den Problemen und früheren Erfahrungen besteht. Die Leichtigkeit eines Denkproblems ist gleichzeitig von den Besonderheiten des Problems und den Besonderheiten früherer Erfahrungen abhängig. Der historische und der strukturelle Aspekt sind keine alternativen, sich gegenseitig ausschliessende Theorien zur Erklärung von Problemlösung und Einsicht, (wie z. B. die Vertreter einer konsequenten trial-and-error-Theorie glauben), sondern sind zwei Aspekte, die sich zur gegenseitigen Ergänzung fordern.

7. *Das Problem der Erfahrung neu formuliert.*

Das Erklären individueller oder kollektiver Verhaltungsweisen als Ergebnisse oder Konsequenzen ganz bestimmter Erfahrungen gehört zu den ältesten Erklärungsprinzipien in der Psychologie, Pädagogik, Soziologie, Geschichte, Literatur- und Kunstgeschichte, usw. Die Ratte wählt bei dem kritischen Wahlversuch die Karte mit dem Kreis von 12 cm Diameter (d. h. den »grösseren»), weil sie in der Trainingsperiode erfahren hat, dass der grössere Kreis zum Futter führt. Das deutsche Volk hat von den Bauernkriegen bis 1918 *die* Erfahrung gemacht — im Gegensatz zu dem englischen, französischen, russischen —, dass es aus eigener Kraft, durch Revolution von unten, sich die Freiheit

nicht erkämpfen kann: aus diesen Erfahrungen heraus ist es zu einem Volk der »Untertanen» geworden.

Bei dieser Art von Ueberlegung wird die Frage nicht gestellt, was eigentlich die Erfahrung eines Lebewesens (oder eines Volkes) in einem geschichtlichen Augenblick ausmacht. Man beschreibt das Geschehen, an dem der Organismus als Mitagierender oder als Zuschauer Teil hatte, und ist der Meinung, damit *seine Erfahrung* festgelegt zu haben. Nun haben wir gesehen, dass der Kern des Erfahrungsproblems — der strukturelle Aspekt — dabei ignoriert wird. Eine Erfahrung in einem gegebenen Zeitpunkt unseres Lebens wird durch die blosse Beschreibung der äusseren Umstände nur ganz unzulänglich festgelegt. Die Erfahrung wird wissenschaftlich erst dann angegeben, wenn wir die Strukturbildung beschreiben, die unsere Verständnisarbeit aus den äusseren Umständen macht. Erfahrungen sind innere (psychische) Gebilde, zu denen sich das äussere Geschehen formiert. Die Spuren (»Engramme», »Residuen») solcher Strukturbildungsprozesse sind als »Erfahrungswirkungen» in der Zukunft spürbar und modifizieren zukünftiges Verhalten.

Wir vermuten dass jeder psychische Prozess in seinem Verlauf von seiner Interaktion mit den Spuren früherer Erfahrungen abhängig ist. Wie wir eine gegenwärtige Situation verstehen, zu was für einer Erfahrung die gegenwärtige Konstellation sich formiert, ist nicht ausschliesslich von der gegenwärtigen Konstellation sondern auch von unseren früheren Erfahrungen abhängig.

Die Einsicht, dass »Erfahrung» nicht in dem einfachen Niederschlag äusserer Umstände, sondern in deren besonderen psychischen Verarbeitung besteht, ist die gemeinsame Konsequenz experimentell-psychologischer und psychoanalytischer Studien. Bei der Analyse neurotischer Patienten machen wir immer wieder die Beobachtung, dass die »traumatische Situation» in der frühen Kindheit nicht die einfache Wiederspiegelung der realen Situation ist, sondern deren psychische Verarbeitung. Zufolge hochgesteigerter Triebspannungen entstehen phantastische Fehlauffassungen der Realität; diese wirken pathogen und müssen im Laufe der analytischen Behandlung korrigiert werden. Hierbei

stossen wir auf einen weiteren Faktor, der bei der Formierung unserer »Erfahrungen» mitwirkt: Die Spannung unserer Triebe, Wünsche, Absichten, Affekte, usw. Die Behandlung dieser, die als der *dynamische Aspekt* den beiden anderen, dem strukturellen und dem historischen an die Seite gestellt werden kann, geht aber über den Rahmen unserer gegenwärtigen Studie hinaus.

Zum Schluss soll noch auf eine neue and bisher ungeahnte Schwierigkeit hingewiesen werden, der wir uns entgegengestellt sehen. Der einfache und klare Satz, »wir sind Produkte unserer Erfahrungen», der bisher als eine so brauchbare Arbeitshypothese sich erwiesen hat, verliert seinen Sinn. Der strukturelle und der dynamische Aspekt fordert als Ergänzung die (vielleicht bloss scheinbar) widersprechende These: »Wir formieren unsere Erfahrungen». Bei dem gegenwärtigen Stand unserer Erkenntnisse ist es unmöglich, den Gültigkeitsbereich der beiden Sätze gegeneinander prinzipiell abzugrenzen.

What is a true assertion?

By

Andries H. D. Mac Leod.

1. — The thoughts contained in this essay are closely connected with certain ideas of INGEMAR HEDENIUS and have been considerably influenced by his writings »Begriffsanalyse und kritischer Idealismus (I)» in Theoria, Vol. V, Part 3, 1939, »Om Hägerströms filosofi», Tiden, 1, 1940, »Om rätt och moral», Stockholm, Tidens förlag, 1941, especially pp. 15—18 & 71—77, and § 2 of »Überzeugung und Urteil», Theoria, Vol. X, 2, 1944, as well as by the interchange of ideas which took place during personal conversation. Nevertheless my own way of thinking and terminology differ in many respects from those of HEDENIUS.

The present essay has its origins in the lecture which I was permitted to give in Filosofiska Föreningen at Upsal on the 15th February 1945. If I have succeeded in treating the subject somewhat better in the following pages than in my lecture, this is to no small extent due to the valuable stimulus which I received from Docent INGEMAR HEDENIUS', Docent ANDERS WEDBERG's and Teol. lic. HANS NYSTEDT's contributions to the discussion which followed the lecture.

I beg to offer my sincere thanks to Dr. W. MAYS of the University of Manchester for his valuable suggestions as to the proper choice of various English words and expressions. I also owe a debt of gratitude to Mrs K. JANSSEN of Ghent and Fil. mag. A. V. ROSÉN of Falun for the advice which their knowledge of the English language enabled them to give me.

2. — In what follows we mean by *sentence* any sequence of words called »sentence» in grammar. Hence a sentence is made up of sounds or written characters.

3. — In the remaining parts of this essay I assume the following.

On the table in this room stands an electric lamp which gives a strong light. When we simply say *the lamp*, we shall always mean this particular lamp. In the room there are, besides myself, at least two other persons, whom I shall call A and B. A is very intelligent, has a powerful capacity for clear thought, and a remarkable ability for grasping quickly and delimiting sharply any objects on which he reflects. Moreover A possesses a thorough knowledge of mathematics, mechanics and electrical theory.

4. — In what follows I assign to the sentence *an alternating electric current at a pressure of 220 volts is passing through the lamp* the meaning which it must have according to the definitions adopted in mathematics, mechanics and electrical theory, when these subjects are treated scientifically and with the utmost thoroughness and precision, but without entering into the domain of philosophy. According to the position thus taken up by us, this meaning of the sentence in question is to be regarded as the only permissible one. And all the other persons considered in the present essay are assumed to take up an identical position.

When we use the words *the selected definitions of science*, they are always to be interpreted as an abridged mode of expression standing for: the system of definitions obtained by selecting from the definitions adopted in mathematics, mechanics and electrical theory those which are needed in order to fix completely the meaning of the sentence »an alternating electric current at a pressure of 220 volts is passing through the lamp» and in order to do this in the manner which, according to the preceding part of the present section, is the only permissible one.

5. — The following assumptions will be admitted, conjointly with those made in §§ 3 & 4, throughout the whole of this essay.

An alternating electric current at a pressure of 220 volts is passing through the lamp.

A pronounces the sentence: »*an alternating electric current at a pressure of 220 volts is passing through the lamp*». When we say *A's sentence*, we always mean precisely this sentence and no other. In pronouncing this sentence, A conceives the purport of what he is saying as clearly, correctly and completely as it is possible for a human mind to do.

B pronounces the sentence: »*A's assertion is true*». When we say *B's sentence*, we always mean precisely this sentence and no other, apart from the exceptions to this rule which occur in §§ 23—24 and concerning which the necessary explanations will be given there.

6. — A may pronounce A's sentence on several occasions. But in § 5 we have only one such occasion in mind. On this particular occasion A in the act of pronouncing this sentence connects a certain apprehension with it, as can be gathered from what we have said in § 5. This apprehension will be called F.

By *apprehension* we mean any awareness of a datum, no matter what that datum is. We class judgments as apprehensions. The apprehension F will probably be a judgment.

7. — B's sentence is ambiguous and can have more than one meaning. This also holds good for the expression »A's assertion» and for the adjective »true». In this essay we are not concerned with the meaning B himself attaches to his words.

8. — The present essay is chiefly concerned with the problem of how to define the meanings of »A's assertion», of »true» and of B's sentence in order to obtain a set of meanings, let us call them t h e g i v e n m e a n i n g s or s e n s e s, satisfying the following seven conditions:

I) B's sentence acquires its given meaning when the given meanings of the expression »A's assertion» and of the adjective »true» are assigned in B's sentence to this expression and to this adjective.

II) The given meaning of the adjective »true» gets to the core of the meanings of this adjective which are sanctioned by our

linguistic sense; the given meaning of the expression »A's assertion» need not have such a close affinity with the meanings of this expression which are sanctioned by our linguistic sense, but remains nevertheless in touch with them.

III) When B's sentence has its given meaning, it can be understood even by a person who is totally ignorant of mathematics, mechanics and electrical theory and who therefore is unable to understand A's sentence.

IV) When »A's assertion» and B's sentence have their given meanings, then the expression »A's assertion» has a meaning by itself, and the whole of the sentence »A's assertion is true» expresses something which transgresses what is expressed by the mere words »A's assertion» and transgresses what is expressed by the sentence »A's assertion occurs».

V) When we say, in the given sense, that A's assertion is true, then it is our intention to ascribe by means of our statement a certain attribute, viz. the attribute to be true in the given sense of that word, to a certain logical subject, viz. to A's assertion in the given sense of the expression »A's assertion»; and the attribute to be true in the given sense is constituted by the attribute to stand in such-and-such a particular relation to some kind of reality.

VI) An apprehension in which we conceive exactly what is expressed by B's sentence when it has its given meaning, is a clear apprehension with a sharply delimited content.

VII) It is really the case that A's assertion is true, in the given sense of the words »A's assertion is true».

The following inquiry will show that an attempt to assign meanings satisfying these seven conditions to »A's assertion», to »true» and to B's sentence meets with considerable difficulties. The present essay does not do more than to point out some of these difficulties.

The Roman figures I, II, III, IV, V, VI and VII will throughout denote the conditions enumerated here.

9. — Let us consider any set of meanings respectively of »A's assertion», of »true» and of B's sentence which satisfy the con-

ditions I, III, IV & V, and call them the given meanings or senses. Since condition V is fulfilled, the attribute to be true, in the given sense of the adjective »true», is constituted by the attribute to stand in such-and-such a particular relation to some kind of reality. We are then at liberty to denote this particular relation by means of the expression »truth-relation». In so doing we assign a certain definite meaning to the said expression. If and only if a given meaning of »truth-relation» can be obtained in this manner, we will say that *the given meaning of »truth-relation» and the combination of the given meanings of »A's assertion», of »true» and of B's sentence fit each other.*

If a given sense of »truth-relation» fits the combination of the other three given senses, then B's sentence, taken in its given sense, is obviously synonymous with the sentence »there is some kind of reality to which A's assertion stands in the truth-relation», provided »A's assertion» and »truth-relation» be used in their given senses in the latter sentence.

10. — Let *a* and *b* be two apprehensions, *s* a word or a sequence of words or a sign of some other kind. Let *m* be any definite meaning of *s* and let *n* also be any definite meaning of *s*. Suppose that in *a* the mind conceives exactly what is expressed by the sign *s* when it has the meaning *m*. Suppose that in *b* the mind conceives exactly what is expressed by the sign *s* when it has the meaning *n*. Here and elsewhere where the word *exactly* is used in a similar context, its task is to intimate that nothing more is conceived in the apprehension concerned than what is indicated. Let *ca* be the content of *a*, i. e. what is conceived in *a*, so far as it is conceived and just as it is conceived. Let *cb* be the content of *b*, i. e. what is conceived in *b*, so far as it is conceived and just as it is conceived. With these suppositions we can lay down the following principle: if the meaning *m* of *s* coincides with the meaning *n* of *s*, then there cannot be any difference between the content *ca* and the content *cb*. According to the above, the content *ca* is indeed nothing else than what is expressed by *s* when it has the meaning *m*, whilst the content *cb*

is nothing else than what is expressed by *s* when it has the meaning *n*. Hence, if there were any difference between *ca* and *cb*, *s* would not express the same thing when it has the meaning *m* as when it has the meaning *n*, from which it would follow that *n* is another meaning than *m*.

11. — What the conditions II and VI really demand of what is called in § 8 »the given meaning» of B's sentence, is this: an apprehension in which the mind exactly conceives what is expressed by B's sentence when it has its given meaning, must be a clear apprehension with a sharply delimited content and must stand in a certain peculiar relation of affinity to certain rather vague & obscure apprehensions which according to my own linguistic sense are connected with the word »true». If I could describe directly these vague & obscure apprehensions as well as what to me appears as belonging to the core of their contents, their connection, according to my own linguistic sense, with the word »true» would be irrelevant both to our immediate, perhaps unattainable goal and to the philosophic problems at which the present essay more remotely aims. But it is impossible to produce a direct description of the vague & obscure apprehensions with which we are really concerned or of what to me appears as belonging to their very core. I cannot point out these elements to the reader in any way other than by means of their connection in my own mind with the word »true», in the hope that there exists a similar connection in his mind. Now this hope may very well be fallacious, on account of the variations of linguistic sense from one individual to another. But if my own linguistic sense was not conformable to that of other persons as far as the meanings of »A's assertion», of »true» and of B's sentence are concerned, this would be irrelevant to our speculations, except in connection with the chances of my succeeding in making myself understood by the reader.

12. — Given any set of meanings of »A's assertion», of »true» and of B's sentence which satisfies the conditions I, II, III, IV, V, VI & VII, it will always satisfy the following condition:

VIII) If we adopt the given meaning of »A's assertion» and

a meaning of »truth-relation» that fits the combination of the given meanings of »A's assertion», of »true» and of B's sentence, we can say that A's assertion stands in the truth-relation to some kind of reality; and, given any reality to which A's assertion has the truth-relation, the existence of this relation between them depends only on the intrinsic nature of A's assertion and on the intrinsic nature of the reality which forms the other term of the relation.

In order to justify this thesis concerning the connection between the condition VIII and the conditions I—VII, we say only this: if a certain set of meanings of »A's assertion», of »true» and of B's sentence satisfies the conditions I, III, IV, V, VI and VII, but does not satisfy the condition VIII, then it will certainly not satisfy the condition II. Of course this is hardly a justification. Nevertheless we shall henceforth take our thesis for granted, without attempting to offer a better defence for it.

The Roman figure VIII will throughout denote the same condition as it does in the present section.

13. — The problem propounded in § 8 involves inter alia the question: what is to be meant by »A's assertion»? In the remaining parts of the present essay we are principally going to turn our attention to this question. At least three possibilities suggest themselves. The expression »A's assertion» can either (i) denote something which consists of one or several mental phenomena occurring in A's mind or in other persons' minds, or (ii) denote some reality of the same nature as a Platonic idea, hence a reality independent of any kind of individual consciousness, or (iii) denote some sign or complex of signs. In the following only the possibilities (i) and (iii) will be taken into account.

14. — What happens if by »A's assertion» we mean some sign or complex of signs? We can for example proceed in the following way. Let us write down the selected definitions of science (§ 4) one after the other and then, last of all, A's sentence (§ 5). We denote by U the complex of signs thus

written down. Let us translate U from English into some artificial language such as the one adopted by mathematical logic, hence into a language in which signs are used in accordance with a definite system of explicitly established rules. We denote by T the complex of signs supplied by this translation of the selected definitions of science and of A's sentence. T can possibly be imagined to stand to the phenomena in the lamp (§ 3) in a relation more or less akin to the one existing for example between a correct map of America and America itself. T would then form as it were a kind of map of the phenomena in the lamp. I have no definite opinion concerning this view, but in the following I assume that it can be vindicated. Let us call the relation in which we thus suppose T to stand to the phenomena in the lamp *the pictorial relation.* We are evidently at liberty to mean by »A's assertion» the complex of signs T, to call the pictorial relation »truth-relation», to express by means of the adjective »true» the attribute to stand in the pictorial relation to some kind of reality, and to stipulate that B's sentence is to mean that there is some kind of reality to which T stands in the pictorial relation. Let us adopt this mode of procedure. We call the four meanings respectively of »A's assertion», of »true», of B's sentence and of »truth-relation» thus obtained the given meanings or senses.

The given meanings of »A's assertion», of »true» and of B's sentence satisfy the conditions I, III, IV, V, VI & VII. The given meaning of »truth-relation» fits the combination of the three other given meanings. But what of the condition VIII? An idea which is likely to present itself to the mind, is the one that the pictorial relation between T and the phenomena in the lamp would consist in this: there is some complex of apprehensions satisfying the condition that such-and-such a relation holds between T, this complex of apprehensions and the phenomena in the lamp. To be sure the relation which is described here as »such-and-such a relation» would then be a triadic relation, but the whole would nevertheless still be a dyadic relation, viz. a

relation between T and the phenomena in the lamp. The complex of apprehensions involved by this relation could for example consist of apprehensions in which we conceive the meanings of all the signs occurring in T whose meanings are not stated by the selected definitions of science. But if the pictorial relation were of that kind, the condition VIII would not be fulfilled, since A's assertion is nothing else than T, the truth-relation is the pictorial relation, and the phenomena in the lamp are a reality to which A's assertion stands in the truth-relation. According to § 12, the condition II would then not be fulfilled either.

Between a correct map of America and America itself there is however a purely geometrical relation, which is quite independent of the existence of any apprehensions of the significance of the signs occurring on the map, which does not involve any apprehensions whatsoever. Therefore one may feel inclined to assume that the pictorial relation, which is here supposed to hold between T and the phenomena in the lamp, does not either involve any apprehensions, that its existence only depends on the intrinsic nature of T and on the intrinsic nature of the phenomena in the lamp, and that the condition VIII is satisfied. Let us henceforth admit this assumption throughout the whole of our essay. The pictorial relation conceived in this manner seems to be the same relation as the one which is considered in numbers 4.014 & 4.0141 of LUDWIG WITTGENSTEIN's Tractatus Logico-Philosophicus, London, Kegan Paul, 1922, and which is there also called »pictorial relation» (see also ibid. 4.123).

Imagine now, for the sake of experiment — the fundamental idea of this experiment is one that we have borrowed from HEDENIUS —, that A writes down T in a dreamless sleep, that no one has ever connected any apprehension with these signs and that no one has a more closely determined idea of the nature of the phenomena taking place in the lamp. In the reasoning which we are going to make from this moment we admit that matters stand thus. The state of things thus admitted does not affect the intrinsic natures of T and of the phenomena in the lamp. Hence even as matters are now supposed to stand,

T has the pictorial relation to the phenomena in the lamp. Therefore, the phenomena in the lamp being unquestionably a specific reality, there is some kind of reality to which T stands in the pictorial relation. Consequently, provided we continue to adopt the given meanings of »A's assertion», of »true» and of B's sentence, we must say even now that A's assertion is true. Hence what is expressed by B's sentence when in this sentence the expression »A's assertion» and the adjective »true» have their given meanings, can be correctly inferred from the whole of what is here supposed to be the case. But when in B's sentence I assign to the expression »A's assertion» its given meaning and submit the meaning of the adjective »true» to the condition that it has to get to the core of the meanings of this adjective which are sanctioned by our linguistic sense, I perceive that B's sentence then expresses something which can never be inferred from the whole of what is here supposed to be the case. It is evident that on the contrary A's assertion in the given sense cannot, as matters are now supposed to stand, be said to be true, when the meaning of the adjective »true» is submitted to the condition that it has to get to the core of the meanings of this adjective which are sanctioned by our linguistic sense. Consequently the given meaning of the adjective »true» does not get to the core of the meanings of this adjective which are sanctioned by our linguistic sense. Therefore the given meanings of »A's assertion», of »true» and of B's sentence, though satisfying the conditions I, III, IV, V, VI, VII & VIII, do not satisfy the condition II.

15. — Would we in § 14 have succeeded better in finding a set of meanings of »A's assertion», of »true» and of B's sentence satisfying the conditions I, II, III, IV, V, VI & VII, if we had used the expression »A's assertion» as a name for the series of sequences of English words constituted by U, instead of using it as a name for T? No, and the reasons for this negative answer are analogous to those which we adduced in § 14. After the substitution of U for T success seems right from the start less likely than it did in § 14, because it seems more difficult to

admit that U forms as it were a kind of map of the phenomena in the lamp, than to admit this concerning T.

16. — In our opinion it is not in any way possible to obtain a set of meanings of »A's assertion», of »true» and of B's sentence satisfying the conditions I, II, III, IV, V, VI & VII, if the sense of the expression »A's assertion» contained in the set has to be one in which it denotes some sign or complex of signs. To be sure §§ 14—15 do not supply a complete proof of the correctness of this opinion, but all the same it seems to us that in §§ 14—15 we have got at the essentials on which such a proof could be based. We content ourselves which such support as our point of view can derive from what is adduced there.

17. — A possesses a thorough knowledge of mathematics, mechanics and electrical theory (§ 3). Consequently A has had a series of apprehensions in which he has completely conceived the purport of the selected definitions of science. Let E be the complex consisting of the apprehensions belonging to this series and of A's sentence. E is thus a miscellaneous complex, consisting of apprehensions and a sign. Moreover it follows from the definition of E that E neither includes the apprehension F (§ 6), nor any apprehension of A's sentence.

Let us by »A's assertion» mean the complex E. Suppose that we succeed in defining and that we adopt two meanings respectively of »true» and of B's sentence which, combined with the meaning just adopted of »A's assertion», make up a set of three meanings satisfying the conditions I, III, IV, V, VI, VII & VIII. Let us adopt a sense of »truth-relation» fitting the combination of these three meanings (§ 9). Suppose finally that the phenomena in the lamp form a reality to which A's assertion, i. e. E, stands in the truth-relation. The condition VIII being fulfilled, the existence of the truth-relation between E and the phenomena in the lamp depends only on the intrinsic natures of these phenomena and of E. Now we are once more for the sake of experiment going to reason about a certain imaginary state of things; this new experiment rests on the same fundamental idea, bor-

rowed from HEDENIUS, as the experiment to which we had recourse in § 14. Imagine that A pronounces A's sentence in a dreamless sleep. This time it is not permitted to add to this that no one has ever connected any apprehension with the words making up A's sentence. For A, before he pronounced the sentence in his sleep, has conceived the purport of the selected definitions of science, in doing which he has connected certain apprehensions with several different parts of the sentence respectively, each one of these parts being taken separately. These apprehensions are included in E, and if we were to imagine that they did not exist, we would thereby modify the intrinsic nature of E. But instead we add the following to the description of the state of things which we imagine for the sake of experiment: neither A nor anybody else has ever connected any apprehension with the whole of A's sentence, neither A nor anyone else has any apprehension of this sentence itself or has any more closely determined idea of the nature of the phenomena taking place in the lamp. The intrinsic nature of E and that of the phenomena in the lamp are not affected by what is thus imagined to be the case. Hence even as matters are now imagined to stand, E has the truth-relation to the phenomena in the lamp. Therefore, these phenomena being a specific reality, there is some kind of reality to which E stands in the truth-relation. Consequently, provided we keep to the meanings of »A's assertion», of »true» and of B's sentence adopted in the above, we must say even now that A's assertion is true. But when in B's sentence I assign to the expression »A's assertion» its adopted meaning and submit the meaning of the adjective »true» to the condition that it has to get to the core of the meanings of this adjective which are sanctioned by our linguistic sense, I perceive that B's sentence then expresses something which can never be inferred from the whole of what is here supposed or imagined to be the case. It is evident that on the contrary A's assertion in the adopted sense cannot, as matters are now supposed or imagined to stand, be said to be true, when the meaning of the adjective »true» is submitted to the condition that it has to get to the

core of the meanings of this adjective which are sanctioned by our linguistic sense. From this we conclude, by reasoning as in § 14, that the meanings of »A's assertion», of »true» and of B's sentence adopted in the present section, though satisfying the conditions I, III, IV, V, VI, VII & VIII, do not satisfy the condition II.

18. — What is stated in § 17 illustrates the difficulty which prevents the meanings of »A's assertion», of »true» and of B's sentence from satisfying the conditions I, II, III, IV, V, VI & VII, when it is required that the expression »A's assertion» should denote a miscellaneous complex consisting of apprehensions and signs, but neither including the apprehension F (§ 6) nor any other apprehension with a content similar to F's content.

In order to find some means of avoiding this difficulty, we are now going to examine what happens if we mean by »A's assertion» the complex, say G, obtained by adding the apprehension F to the complex E (§ 17). Even G is a miscellaneous complex, consisting of apprehensions and a sign. The sign belonging to G is A's sentence. The apprehensions belonging to G are F and the apprehensions in which A has successively conceived the purport of the selected definitions of science. The question which interests us is whether between G and the phenomena in the lamp there exists some relation of which the following holds good: if we call this relation »truth-relation», if we by »A's assertion» mean the complex G, if we let the adjective »true» express the attribute to stand in the truth-relation to some kind of reality, and if we stipulate that B's sentence is to mean that there is some kind of reality to which G stands in the truth-relation, we obtain a set of meanings of »A's assertion», of »true» and of B's sentence satisfying the conditions I, II, III, IV, V, VI & VII. For reasons more or less akin to those given in §§ 14 & 17, it seems to me that if this question admits of an affirmative answer, such an answer will have to remain valid even if in the framing of the question we replace G by the complex, say H, consisting of nothing but the apprehensions obtained if the sign constituted

by A's sentence is removed from G and only the apprehensions belonging to G are retained. The sign belonging to the complex G can only be relevant to the question which interests us as far as it is also conceived in one or several of the apprehensions belonging to G. The sign itself consists of sounds or written characters, i. e. of purely physical objects, and their suppression without any modification of the states of consciousness belonging to G cannot invalidate an originally valid affirmative answer to the question.

In this way we are induced to direct our attention to the question what happens if we mean by »A's assertion» the complex H, consisting merely of the apprehension F and of the apprehensions in which A has successively conceived the purport of the selected definitions of science. An apprehension is an awareness, hence a mental phenomenon. Consequently the complex H, which we at present are induced to denote by the expression »A's assertion», consists of mental phenomena. Thus we have now arrived at a way of proceeding which forms an instance of the possibility (i) in the enumeration of three possibilities made in § 13. In the remaining part of the present essay we are going to confine ourselves to the examination of what can be attained by restricting oneself exclusively to this first possibility.

19. — Before asking what happens if by »A's assertion» is to be meant the complex of apprehensions H (§ 18), we are going to make some reflections on the question of how far one can get if the expression »A's assertion» is used as a name for one single apprehension, somehow or other more closely determined.

If one wishes to proceed in this manner, one's first thought is to use »A's assertion» as a name for an apprehension in which the mind conceives exactly (§ 10) what is expressed by A's sentence when this sentence has the meaning which it must have according to the selected definitions of science and which is the only meaning it is allowed to have in the present essay (§ 4). Let us adopt this definition of the meaning of »A's assertion» in the remaining part of § 19.

In order that we may be allowed to say of a given apprehension and in the sense thus adopted that it is A's assertion, all that according to the selected definitions of science makes up the purport of the information conveyed by A's sentence, ought to be completely conceived in the given apprehension. In this apprehension the mind should consequently conceive the purport of all the statements by means of which the electrical theory defines the volt in terms of the centimetre, the gramme and the second. According to the selected definitions of science the idea of a pressure of 220 volts involves the notion of definite integral. Hence in the given apprehension the mind ought furthermore to conceive the purport of all the definitions by means of which mathematical science constructs d e f i n i t e i n t e g r a l s out of n a t u r a l n u m b e r s. These are merely examples, and many others could be added to them. But these examples are sufficient to show the following: if one proceeded to write down all that ought to be conceived in the given apprehension, i. e. in one single apprehension, hence not successively, but at one single glance, the result would be a regular treatise of mathematics, mechanics and electrical theory. But not even the most learned mathematician and physicist, endowed with the most powerful intellect, could engender such an apprehension in his mind. No human being is able by one single indivisible act to attend to such a comprehensive content. Therefore there exists no apprehension like the one denoted by »A's assertion».

Although in fact A's assertion does not exist, the assumption of its existence does not involve any absurdity. Furthermore we believe it possible, at least in principle, to form a perfectly determined idea of a relation — let us call this relation with the import which this idea gives to it *the relation of accordance* — concerning which the following is evident: if there existed an apprehension that could be said to be A's assertion in the sense adopted, then this apprehension would necessarily be in accordance with the phenomena in the lamp; if A's assertion existed, if we moreover used the adjective »true» for expressing the attribute t o b e i n a c c o r d a n c e w i t h s o m e k i n d

of reality, and stipulated that B's sentence is to mean that there is some kind of reality with which A's assertion is in accordance, then the meanings of »true» and of B's sentence thus adopted and the meaning of »A's assertion» already previously adopted would satisfy the conditions I, II, III, IV, V, VI, VII and consequently (§ 12) even VIII. The reason why A's assertion, if it existed, would necessarily be in accordance with the phenomena in the lamp, lies in the fact that an alternating electric current at a pressure of 220 volts is really passing through the lamp (§ 5). There is obviously a close connection between this fact's character of being the reason in question and the following principle: if S is P, then the assertion that S is P is a true assertion. An inquiry into the nature of this connection and into the meaning of the principle itself is not possible within the narrow compass at our disposal.

From what has been said previously in § 19 it can be seen that A's sentence conveys information inter alia about certain relations between what happens in the lamp and certain physical objects or phenomena outside the lamp, for instance the standard metre at the Pavillon de Breteuil near Paris. These relations and these physical objects or phenomena, external in relation to the lamp, are contained in the fact that an alternating electric current at a pressure of 220 volts is passing through the lamp. Hence this fact contains certain elements which fall outside the lamp. These elements must nevertheless be considered as included in what we call »the phenomena in the lamp». Whenever we speak of the phenomena in the lamp, we include in these phenomena all that belongs to the fact that an alternating electric current at a pressure of 220 volts is passing through the lamp. If what we call »the phenomena in the lamp» were strictly confined to what happens in the lamp, several statements made in this essay would be erroneous, for instance our statement in the present section that A's assertion, if it existed, would be in accordance with the phenomena in the lamp.

Although A's assertion does not exist, we are evidently at liberty to use the adjective »true» to express the attribute to be

in accordance with some kind of reality, and to stipulate that B's sentence is to mean that there is some kind of reality with which A's assertion is in accordance; i. e. we are at liberty to maintain the definitions of the meanings of »true» and of B's sentence which were adopted a little while ago under the supposition that A's assertion existed. Let us do this, i. e. continue to adopt these definitions, in what remains of the present section.

The adopted meanings of »A's assertion», of »true» and of B's sentence satisfy the conditions I, II, III, IV, V & VI. Obviously the combination of these meanings fits the sense of the expression »truth-relation» in which it denotes the relation of accordance (§ 9). According to what was shown in the above, A's assertion is a mere nonentity, which in our judgment entails the consequence that the following is not the case: the relation of accordance holds between A's assertion and some kind of reality. Hence the following is not the case: A's assertion is true. Therefore the condition VII is not satisfied, from which it follows that the condition VIII is not fulfilled either. Nevertheless the adopted meanings satisfy as it were part of the latter condition, in so far as the following is evident: if a certain apprehension and a certain reality are given, then it will depend only on the intrinsic natures of the given apprehension and of the given reality whether the relation of accordance does or does not hold between them.

If we want to define the meanings of »A's assertion», of »true» and of B's sentence in such a manner that the condition VII be satisfied (§ 8), then we see from the preceding that the adopted meanings must be rejected. But what would happen if we, retaining the adopted meaning of »A's assertion», combined it with other meanings of »true» and of B's sentence than the adopted ones? By reasoning as in the above we see at once that such a new combination, at least if the conditions I, III, IV & V be fulfilled by it, never can fulfil the condition VII. Consequently the meaning of »A's assertion» adopted in the present section cannot in any way lead to the goal set up in § 8.

One may ask: would A's assertion, if it existed, be an apprehension of the phenomena in the lamp? What connection or relationship is there between the attribute to be in accordance with the phenomena in the lamp, which most certainly would belong to A's assertion if A's assertion existed, and the attribute to be an apprehension of the phenomena in the lamp? The proper answers to these questions depend on the sense attributed to the expression »an apprehension of the phenomena in the lamp». Several meanings of this expression, very different from one another, lie close at hand. Certain reflections bearing on our two questions are to be found in my book »Sur diverses questions se présentant dans l'étude du concept de réalité», Paris, Librairie scientifique Hermann & C^ie^, 1927, especially in nos 114, 126, 127, 287 & §§ 32, 66, 70, 72. Our relation of accordance, which is there called »la relation d'accord», covers to some extent A. MEINONG's »Adäquatheitsrelation» in »Über Annahmen», zweite, umgearb. Aufl., Leipzig 1910, pp. 262—266 (see no 445 bis of my book).

Apart from certain merely formal points of agreement, there is not the slightest resemblance between the relation of accordance and the pictorial relation (§ 14). Between these two relations there is no affinity whatever, they are as essentially different as it is possible for two relations to be. This circumstance gives further support to the opinion, which we have defended in § 14, that the meanings of »A's assertion», of »true» and of B's sentence which are there called »the given meanings» do not satisfy the condition II. For the combination of those three meanings fits the sense of the expression »truth-relation» in which it denotes the pictorial relation, whilst the combination of the meanings of »A's assertion», of »true» and of B's sentence which are adopted at present fits the sense of the expression »truth-relation» in which it denotes the relation of accordance, and satisfies the condition II.

On p. 202 of »Problems of Mind and Matter», Cambridge University Press, 1934, JOHN WISDOM says that »My judgment

that Cameronian beat Orpen accords with a fact» means »There is some fact such that (i) the elements in that fact are identical with the objective constituents in my judgment, (ii) the order of the elements in the judgment reflects the order of the elements in the fact». Our own view, stated here without any attempt at justification, is this. Every judgment is an apprehension (§ 6). Every apprehension occurring in the human mind is a perfectly simple entity. Hence no judgment made by a human being has any constituent distinct from the judgment itself. Consequently the relation which WISDOM calls »accordance» never holds between a fact and a judgment made by a human being. Even an apprehension that would deserve the name of »A's assertion» in the adopted sense would, if such an apprehension existed, be a perfectly simple entity. Therefore such an apprehension could not have the relation which WISDOM calls »accordance» to the phenomena in the lamp. But notwithstanding the utter simplicity of such an apprehension and the obvious complexity of the phenomena in the lamp, the relation which we call »accordance» would hold between them. Hence the same word, viz. »accordance», is used by WISDOM and by us as a name for two profoundly different relations. — In contending that human apprehensions are simple entities, we are following in certain respects ADOLF PHALÉN; see for instance his article »Till frågan om de psykiska företeelsernas allmänna struktur» in the periodical »Psyke», Uppsala 1914, 9th year of publication.

The preceding remarks give a glimpse of the difficulties with which one must contend in order to be able to form a clear and sharply delimited idea of the purport of the relation of accordance and of the purport of the attribute to be true, in the adopted sense of the adjective »true», i. e. the attribute to stand in the relation of accordance to some kind of reality. We refrain from a closer examination of these difficulties. We content ourselves with taking for granted — and we believe this assumption to be true — that it is possible in principle, if not in practice, to master these difficulties to a

sufficient degree to be allowed to include the condition VI amongst the conditions satisfied by the adopted meanings of »A's assertion», of »true» and of B's sentence.

20. — In § 19 we have used the expression »A's assertion» as a name for one single apprehension. This is what we intend to do in the present section too. But instead of meaning, as we did in § 19, by »A's assertion» an apprehension in which the mind conceives exactly what is expressed by A's sentence in the sense which it must have according to the selected definitions of science, we are, from this point until the end of § 20, going to use »A's assertion» as a name for the apprehension F (§ 6).

Surely there is a combination of meanings of »A's assertion», of »true» and of B's sentence including the meaning of »A's assertion» just adopted, satisfying the conditions I, II, III, IV, V & VI, and fitting the sense of the expression »truth-relation» in which it denotes the relation of accordance (§ 19). Let us for a moment adopt any combination of meanings of »A's assertion», of »true» and of B's sentence which includes the already adopted meaning of »A's assertion» and satisfies the conditions I, II, III, IV, V & VI. Let us at the same time adopt a meaning of »truth-relation» fitting this combination. Are we then entitled to say that A's assertion stands in the truth-relation to the phenomena in the lamp? No. And the following reasons can be adduced in support of this negative answer. No human being is able to conceive in one apprehension all that according to the selected definitions of science is stated concerning the phenomena in the lamp in A's sentence (§ 19). Consequently it is not conceived by A in the apprehension F. In F the mind conceives only a small part of that which according to the selected definitions of science is stated concerning the phenomena in the lamp in A's sentence, F is as it were only the rudiment of an apprehension of what is thus stated. In return certain other things are conceived in F, i. e. things of which the mind would not be aware in an apprehension in which it would conceive exactly (§ 10) what is expressed by A's sentence when

this sentence has the meaning which it must have according to the selected definitions of science. In F the person A conceives for instance, though only in a very indefinite manner and as a confused, undifferentiated whole, some of his own previous apprehensions of the purport of the selected definitions of science (§ 17), and has a vague notion of some kind of relation between those previous apprehensions, A's sentence or part of it and the phenomena in the lamp. Perhaps A is, in F, vaguely aware of having in previous apprehensions conceived the purport of all the definitions that are needed in order to fix completely the meaning of A's sentence, and of being able to bring about in his mind faithful reproductions of these previous apprehensions whenever he likes. What we say here about F is inferred from what we have assumed concerning A and concerning the circumstances under which A's sentence is pronounced (§§ 3—6), and from certain empirical rules of the functioning of the human mind. It is not in anyone's power to give an accurate and exhaustive description of what the mind really conceives in an apprehension such as F. The brief suggestions which are all that we venture on here, are however sufficient to show that if the apprehension F is true, then its truth cannot but be dependent on the import which A in his previous apprehensions has given to the selected definitions of science. For if then in those previous apprehensions A gave an other import to the definitions, it could very well happen that the apprehension F would cease to be true. On the other hand, if F has the truth-relation to the phenomena in the lamp, then there is some kind of reality to which F has the truth-relation, and then the apprehension F is true (§ 9). Hence, if it is not true, then it does not stand in the truth-relation to the phenomena in the lamp. Consequently, if A's assertion stood in the truth-relation to the phenomena in the lamp, we could reason as follows. A's assertion, i. e. F, is true. Hence the adopted meanings of »A's assertion», of »true» and of B's sentence, which satisfy the conditions I, II, III, IV, V & VI, satisfy even VII, for which reason they also satisfy VIII (§ 12). On the other hand the apprehension

F can be imagined to cease to be true merely on account of a modification of the import which A in his previous apprehensions has given to the selected definitions of science. Since the apprehension F would cease to be true, the truth-relation would under such circumstances cease to hold between A's assertion, i. e. F, and the phenomena in the lamp, i. e. between the two terms between which it originally held, although it is obvious that the intrinsic natures of these two terms need not in any way be affected by the change in A's previous apprehensions. Hence the condition VIII is not satisfied, contrary to what was found to be the case above. This contradiction proves that A's assertion does not stand in the truth-relation to the phenomena in the lamp. In the argument which has brought us to this conclusion, the combination of the adopted meanings of »A's assertion», of »true» and of B's sentence was only assumed to fulfil the conditions I, II, III, IV, V & VI and to include the sense of the expression »A's assertion» in which it denotes F, i. e. the sense of »A's assertion» adopted throughout the whole of the present section. Consequently there is no combination of meanings of »A's assertion», of »true» and of B's sentence fulfilling the conditions I, II, III, IV, V & VI, and including the adopted meaning of »A's assertion», that would be such that the truth-relation, in a sense fitting the combination, would hold solely between A's assertion and the phenomena in the lamp.

Let J be the complex consisting of the following objects: the phenomena in the lamp, the apprehensions of A anterior to F and in which A has successively conceived the purport of the selected definitions of science, the signs conceived in these apprehensions or in the apprehension F, the objects constituted by such relations between the miscellaneous objects previously enumerated as are relevant to our present speculations. We now ask: is there any combination of meanings of »A's assertion», of »true» and of B's sentence fulfilling the conditions I, II, III, IV, V & VI, and including the adopted meaning of »A's assertion», that would moreover be such that the truth-relation, in a sense fitting the combination, would hold between A's

assertion and the whole or part of the complex J? An alternating electric current at a pressure of 220 volts is passing through the lamp (§ 5). But from this it does not yet follow that the question just propounded admits of an affirmative answer. In order to be able to find the proper answer to this question, we ought to possess a more accurate and exhaustive knowledge than we actually have as to what the mind conceives in each one of the apprehensions belonging to the complex J and in the apprehension F, which constitutes A's assertion. In our opinion such knowledge would be knowledge about the intrinsic natures of the apprehensions concerned. It would consequently be knowledge about certain mental phenomena and would have to be derived in the last resort from memory and introspection. The little knowledge which I possess makes it seem probable to me that the proper answer to our question is: no, it is impossible to define the meanings of »A's assertion», of »true» and of B's sentence in such a manner as to obtain a combination of meanings of the kind demanded. If called upon to state more precisely the reason why this is probable, we can say the following. The signs and apprehensions conceived or at least vaguely conceived in F all belong to J; so do also the dimly discerned relations conceived in F as holding between these apprehensions and signs and the phenomena in the lamp. In saying this, as on many other occasions in this essay, we use the loose and incorrect modes of expression of ordinary language. It would be more correct to say that J contains the apprehensions, signs and relations which come nearest to being such that the following would hold good: what is conceived in F fits these apprehensions, signs and relations. This circumstance in itself speaks in favour of an affirmative answer to our question. But the apprehensions and signs conceived in the apprehension F are conceived in this apprehension, as it were, as kinds of arrows pointing at the phenomena in the lamp. In F the mind centres its attention and interest in the phenomena in the lamp and bestows very little interest and attention on what these arrows are in themselves and on the import of the relations which hold be-

tween the arrows, i. e. the apprehensions and signs, and the phenomena in the lamp and which consist therein that the arrows p o i n t a t the phenomena in the lamp. Therefore, given any combination of meanings of »A's assertion», of »true» and of B's sentence fulfilling the conditions I, II, III, IV, V & VI and including the adopted meaning of »A's assertion», it is not to be expected that the truth-relation, in a sense fitting the given combination, will hold between A's assertion, i. e. F, and the whole or part of the complex J. If the negative answer which we are thus inclined to give to our question, is assumed to be correct, we can say this. Given any combination of meanings of »A's assertion», of »true» and of B's sentence fulfilling the conditions I, II, III, IV, V & VI and including the adopted meaning of »A's assertion», the truth-relation, in a sense fitting the given combination, will hold neither between A's assertion and the phenomena in the lamp, nor between A's assertion and the whole or part of the complex J. But then it is certain that there is no reality whatsoever to which A's assertion would have the truth-relation in a sense fitting the given combination. Hence A's assertion is not true in the sense included in the given combination. Consequently this combination does not satisfy the condition VII. Hence there is no set of meanings of »A's assertion», of »true» and of B's sentence fulfilling the conditions I, II, III, IV, V, VI & VII and including the sense of the expression »A's assertion» in which it denotes F.

21. — From the beginning of § 19 we have speculated as to the question of how far one can advance towards the solution of the problem propounded in § 8 if the expression »A's assertion» is used as a name for one single apprehension, somehow or other more closely determined. We refrain from any attempt to pursue our speculations in that direction beyond the present point, and return to the question in which we were induced to interest ourselves at the end of § 18, viz. the question of what happens if by »A's assertion» we mean the complex H. We adopt this meaning of »A's assertion» throughout the present section.

Only an apprehension can stand to something in the relation

of accordance (§ 19). But A's assertion is a complex of apprehensions (§ 18), and a complex of apprehensions cannot itself in its turn be an apprehension. Hence A's assertion cannot stand to something in the relation of accordance. Consequently A's assertion cannot be true in the sense of the adjective »true« in which this adjective expresses the attribute to be in accordance with some kind of reality. Therefore there is no combination of meanings of »A's assertion«, of »true« and of B's sentence that would satisfy the conditions I, II, III, IV, V, VI & VII, that would include the adopted meaning of »A's assertion«, and would fit the sense of the expression »truth-relation« in which it denotes the relation of accordance. If therefore a given combination of meanings satisfies the conditions I, II, III, IV, V, VI & VII and includes the adopted meaning of »A's assertion«, then any sense of the expression »truth-relation« which fits the given combination is different from the sense in which this expression denotes the relation of accordance.

In the apprehensions which make up the complex H (§ 18), i. e. A's assertion, the mind conceives physical objects which are not signs, mental objects and signs; certain relations, properties, states, mathematical entities, etc. are here also counted among the physical objects which are not signs. The conceived physical objects which are not signs, are constituents or components of the phenomena in the lamp, and in the apprehension F (§ 6) some of them are even directly conceived as such. The mental objects conceived in the apprehensions which make up H, are apprehensions which also belong to H. The conceived signs are A's sentence, or parts of it, and the sequences of words obtained by writing down the selected definitions of science, or parts of these sequences of words. The signs conceived in H are there always conceived as substitutes for physical objects which are not signs. And if in an apprehension belonging to H a physical object which is not a sign, is merely conceived through the mediation of a sign, then there is always some other apprehension belonging to H in which the mind forms a more direct and more comprehensive idea of the same physical object. The

apprehensions conceived in H are there always conceived as mediating in their turn the relations between the signs and the other physical objects for which the signs stand. Now imagine that the mind could form one apprehension in which it would conceive at one single glance all the diverse contents of all the different apprehensions belonging to H. In the unified contents of this new apprehension the mind could then replace every sign by the physical object for which it stands and entirely suppress the signs. The mind could then finally suppress even the apprehensions which it conceived in H, since these apprehensions were merely mediating links between the signs and the other physical objects and thus would have become superfluous. In this manner there would originate an apprehension in which the mind would conceive exactly (§ 10) what is expressed by A's sentence when this sentence has the meaning which it must have according to the selected definitions of science, i. e. an apprehension that would constitute A's assertion in the sense of the expression »A's assertion» adopted in § 19. Therefore the complex of apprehensions H fulfils, as it were, the task of an equivalent or substitute for this unrealizable apprehension. From all this, added to what we have seen in § 19, it seems probable that a combination of meanings of »A's assertion», of »true» and of B's sentence can be found that would fulfil the conditions I, II, III, IV, V & VI, that would include the meaning of »A's assertion» adopted in the present section, and which would moreover be such that the truth-relation, in a sense fitting the combination, holds between A's assertion, i. e. H, and the phenomena in the lamp. Such a combination of meanings would obviously satisfy even the condition VII. Suppose any such combination of meanings of »A's assertion», of »true» and of B's sentence be given, and let us compare the truth-relation, in a sense fitting the given combination, with the relation of accordance. From what we have seen previously in § 21 it follows that these two relations will certainly be different. But on the other hand it is obvious, on account of all we have seen in § 19 and in § 21, that there will have to be a strong affinity between the

two relations. If however I attempt to conceive a set of meanings of »A's assertion», of »true» and of B's sentence satisfying the conditions I, II, III, IV, V, VI & VII and including the adopted meaning of »A's assertion», I fail to make the meaning of B's sentence satisfy the condition VI. Nevertheless I am inclined to believe that success is possible in principle.

22. — Sections 19, 20 & 21 throw some light upon the difficulties with which one has to contend in any attempt to define the meanings of »A's assertion», of »true» and of B's sentence in such a manner that the conditions I, II, III, IV, V, VI & VII be satisfied and that it be possible to ascertain the truth of A's assertion merely by examination of the phenomena in the lamp and of the apprehension F, without taking any other apprehensions into account. My recognition of the importance of these difficulties appears in my own eyes as a concession to HEDENIUS. His influence has substantially contributed to making me perceive the need for this concession.

23. — A may pronounce A's sentence on several occasions (§ 6). We can mean by »A's assertion on a given occasion» the complex consisting of the apprehension which A connects with A's sentence in the act of pronouncing this sentence on the given occasion, and of the previous apprehensions in which A has successively conceived the purport of the selected definitions of science. Let us adopt such a meaning of the expressions »A's assertion on a given occasion», »A's assertion on the first occasion», »A's assertion on the second occasion» (see below) throughout the whole of § 23.

Let us, in order to distinguish the occasion we have in mind in § 5 from the other possible occasions on which A pronounces A's sentence, call it *the first occasion*. A's assertion on the first occasion is obviously nothing else than H (§ 18). Hence all the reflections which we have expounded in § 21 in starting from the expression »A's assertion» and from the meaning of that expression adopted there, apply without any modification to the expression »A's assertion on the first occasion» and to the meaning of the latter expression which is adopted here.

In consequence of this it is not unlikely that a set of meanings of »A's assertion on the first occasion», of »true» and of B's sentence can be found which satisfies the conditions I, II, III, IV, V, VI & VII and includes the adopted meaning of »A's assertion on the first occasion»; in the present context we must of course suppose »A's assertion on the first occasion» to be written instead of »A's assertion» in B's sentence and in the text of the seven conditions. Throughout §§ 23—24 we shall take for granted that we have found such a set of meanings. Throughout § 23 these meanings will be assumed to be adopted. Accepting these assumptions we are entitled to say: A's assertion on the first occasion is true. Let us suppose moreover that a new person enters the room five minutes after A has pronounced A's sentence, i. e. five minutes after the first occasion, that no change has intervened in the electric current through the lamp, that A wants to inform the new-comer about the nature of the current and therefore again pronounces A's sentence. This new occasion on which A pronounces the sentence will be called *the second occasion*. Of course it can very well happen that on the second occasion A does not take the trouble to conceive as correctly the purport of what he says as lies within his power to do, and connects with his words an apprehension in which for instance he conceives the pressure of 220 volts as a strain-quality similar to the qualities of which we are directly aware in the sensations of strain from our muscles or tendons. Let us suppose this to be the case, and finally add to this the supposition that in reality no strain-qualities of the kind intended by A on the second occasion are extant in the lamp. In order to transform A's assertion on the first occasion into A's assertion on the second occasion, we will then have to substitute the apprehension in which electric pressure is conceived as a strain-quality for the apprehension F (§ 6) included in the former assertion. That being so, it is clear that, although A's assertion on the first occasion is true, A's assertion on the second occasion is not.

On the second occasion an alternating electric current at a pressure of 220 volts is still passing through the lamp; A has

all the qualifications enumerated in § 3; on the second occasion A says »an alternating electric current at a pressure of 220 volts is passing through the lamp»: all this is contained in the whole of what is at present supposed to be the case. When we now, bearing in mind all this, say »A's assertion on the second occasion is not true», HEDENIUS, who has suggested to us the leading ideas of the reflections contained in the present section and in § 24, would if I understand him rightly deem this to be an utterance which is strongly offensive to the ear. I must acknowledge the correctness of his view. Moreover HEDENIUS would probably contend that the adopted meaning of »A's assertion on a given occasion» and the one of »A's assertion on the second occasion» are strongly at variance with our linguistic sense, and that the offence-phenomenon arising under the circumstances considered here is due to this. I cannot but recognise that there is a good deal to say in defence of the latter opinion too. For the truth-value of A's assertion on a given occasion, in the adopted sense of the expression »A's assertion on a given occasion», is dependent on the thoughts which arise in A's mind on that occasion, and these are in their turn dependent on the most accidental and insignificant factors, although the phenomena in the lamp do not change and the sentence pronounced by A also remains the same. But to bestow the name of »A's assertion on a given occasion» upon something whose truth-value is so accidental and evanescent, is perhaps a proceeding which is strongly at variance with our linguistic sense.

24. — If the meaning of the expression »A's assertion on a given occasion» adopted in § 23 was indeed strongly at variance with our linguistic sense, I would not find this a sufficient reason for declining to use this meaning of the said expression. Nevertheless it may be important to find how in such a case we could, by modifying the meaning of »A's assertion on a given occasion» adopted in § 23, obtain a new meaning that would harmonize better with our linguistic sense; we therefore will say a few words about this question. — In A's sentence »is passing» stands for »is passing now», and perhaps »is passing

now» does not express the same content on the second occasion as on the first occasion. The complications arising from this circumstance will be totally ignored in the following.

Let L be the whole constituted by the meanings of words in ordinary language and the grammar of ordinary language. Let C be a very intelligent person, who is totally ignorant of mathematics, mechanics and electrical theory, but who possesses a perfect knowledge of L. If C reads A's sentence by itself, he will be unable to understand it properly. But if C reads the whole of the complex of signs U (§ 14) by itself, without any complementary explanations, and is allowed time enough, it will be possible for him to understand U, i. e. to understand properly the selected definitions of science as well as A's sentence. Of course this does not mean that C will be able to call up in his mind an apprehension such as the one we have called »A's assertion» in § 19, we have seen that such an apprehension cannot exist in the human mind. That C understands U implies only that he successively calls up in his mind a series of apprehensions, say H*c*, having the same contents as the apprehensions of the complex H, i. e. the complex of apprehensions which we in § 23 have called »A's assertion on the first occasion». By »content of an apprehension» we mean the same thing here as in § 10. For »content of an apprehension» in this sense Swedish philosophers sometimes say, if I understand them rightly, »uppfattningens psykologiska innehåll». — But why can C understand the complex of signs U by itself, and not A's sentence by itself? Obviously because A's sentence can be understood by means of the selected definitions of science, and every one of these selected definitions can be understood either merely by means of C's knowledge of L or by means of certain other definitions also occurring among the selected definitions of science. But in constructing in his mind the series H*c* of apprehensions which really constitutes the actual understanding of U, C has, outside the complex U of mere signs, no other data to start from than his knowledge of L. From this we can see that there exists a triadic relation, say R*t*, between H, L and U, which

enables C to construct, on starting from U and L, a series of apprehensions, viz. H*c*, having the same contents as the apprehensions of the complex H. In order to express that the relation R*t* holds between H, L and U, we write: R*t* (H, L, U). We also have R*t* (H*c*, L, U). In the present context all qualities of the apprehensions of a given series or complex, except their quality of having such-and-such contents, are irrelevant. If X is a complex of apprehensions and if R*t* (X, L, U), then the apprehensions of X always have the same contents as those of H (in saying this we neglect certain restrictions which, though indispensable in an accurate statement, are not of major importance). If X is a complex of apprehensions and if the apprehensions of X have the same contents as those of H, then R*t* (X, L, U) always holds.

Now we can by the expression »A's assertion on a given occasion» mean any complex of apprehensions, say X, in A's or in somebody else's mind, such that R*t* (X, L, U). Let this be the new meaning of the said expression. Let us in the present section adopt this new meaning of »A's assertion on a given occasion» as well as the corresponding new meanings of »A's assertion on the first occasion» and of »A's assertion on the second occasion». Furthermore we continue to adopt the old meaning of »true», i. e. the meaning adopted in § 23, and adopt finally as new meaning of B's sentence, i. e. in this context of the sentence »A's assertion on the first occasion is true», the meaning which it acquires when the new meaning of the expression »A's assertion on the first occasion» and the old meaning of the adjective »true» are assigned in the sentence to this expression and to this adjective. The complex of apprehensions H will then form a specimen of the species A's assertion on the first occasion as well as of the species A's assertion on the second occasion, and these two species will be identical. The new meanings of »A's assertion on the first occasion» and of B's sentence conjointly with the old meaning of »true» will satisfy the conditions I, II, III, IV, V, VI & VII. Even A's assertion on the second occasion will

be true. A's assertion on a given occasion in the new sense will still be a complex of apprehensions existing in somebody's mind, but need not include the apprehension which A connects with A's sentence in the act of pronouncing this sentence on the given occasion. Therefore the truth-value of A's assertion on a given occasion in the new sense will be independent of what happens in A's mind on this occasion, for which reason the new meaning of the expression »A's assertion on a given occasion» will perhaps harmonize better with our linguistic sense than the meaning adopted in § 23. We do not at all intend to intimate that the new definition of the meaning of »A's assertion on a given occasion» adopted in the present section is one that HEDENIUS would approve of.

25. — Almost every step of the arguments elaborated in the preceding pages gives rise to problems or difficulties which we have not taken into account. One such difficulty was pointed out by NYSTEDT in the discussion following my lecture (§ 1) and can be stated thus, at least this is the form in which it appears to me. On the one hand we strive to attain a certain concept of truth. But we can only see this concept as it were dimly at a distance and do not succeed in laying hold of it. On the other hand we are repeatedly obliged in our reflections to presuppose tacitly that we have already some kind of concept of truth in our possession. This could for instance be shown to occur in the condition VII. What connection is there between the concept of truth which forms our goal, unattained though perhaps not unattainable, and the concept of truth which must be supposed to be already in our possession? How can our reasonings possess any cogency or have any meaning at all, when we seem to presuppose that which we pursue and which we therefore do not yet possess? Any attempt to answer such questions would carry us beyond the bounds of a short paper. In this case as well as in various other cases the narrow limits of our discussion have compelled us to be more superficial than we would have wished.

IIIe Congrès des Sociétés de Philosophie de Langue Française.

Par

Svend Ranulf.

Le IIIe Congrès des Sociétés de Philosophie de Langue Française a eu lieu à Bruxelles et à Louvain le 2—6 septembre 1947. Le caractère du Congrès est très bien indiqué dans les mots avec lesquels M. Jean Delvolvé a commencé sa communication: »En proposant 'les Valeurs' comme thème général d'étude, les organisateurs de ce Congrès répondent très justement au sentiment et à la préoccupation d'un désordre profond de l'esprit humain, cause première, constamment aggravé de ses propres effets, des immenses malheurs que s'abattent en ce temps sur la planète humaine. La philosophie ne peut se dérober à mettre tout son effort au service du salut spirituel commun.»[1] En effet, la plupart des communications faites au Congrès se sont occupées de la question du fondement d'une théorie objective de la valeur et puisque une telle théorie ne peut être basée sur une philosophie positiviste, le Congrès a été encore caractérisé par un abandon presque général du positivisme. Une attitude comme celle qui s'est exprimée autrefois chez Max Weber dans la demande d'une science sociale qui serait »wertfrei», ou comme celle qui a inspiré le livre de Lévy-Bruhl sur »La Morale et la Science des Mœurs», eût trouvé peu de résonance dans la France d'aujourd'hui, si tant est que les philosophes français qui étaient présents en Belgique peuvent être considérés comme une représentation typique de la philosophie française actuelle. En Belgique et en Suisse, au contraire, il paraît qu'il y a une plus forte opposition contre les tendances anti-positivistes qui se sont montrées irrésistibles en France.

L'anti-positivisme français s'est inspiré, le plus souvent, par les courants philosophiques connus sous les noms de phénoménologie et d'existen-

[1] Actes du IIIe Congrès des Sociétés de Philosophie de Langue Française, Louvain et Paris 1947, p. 119.

tialisme. Il paraît, cependant, que Sartre n'est pas l'objet de beaucoup d'admiration et de sympathie du côté de ses confrères philosophiques. On a plus d'estime pour les philosophes allemands: Husserl, Jaspers, et même Heidegger, malgré sa compromission politique. La situation philosophique en France après la guerre de 1939—45 a été décrite comme »la seconde invasion allemande». Cette caractérisation paraît être très juste. Pour un observateur étranger, elle paraît applicable à la philosophie catholique aussi bien qu'à la philosophie laïque, ce qui explique peut-être qu'il a été possible pour ces deux espèces de philosophes de se réunir et de discuter profitablement et sans heurts dans un même congrès. Il se peut cependant que les catholiques français sont plus disposés à invoquer leurs compatriotes Bergson et Blondel que les existentialistes allemands, bien que cette tendance ne fut pas très évidente au Congrès.

En général on retient l'impression que la seconde guerre mondiale a été suivie en France par un revirement philosophique comparable à celui qui se produisit en Allemagne à la suite de la première guerre mondiale. Au moins dans le domaine philosophique (peut-être aussi dans d'autres domaines) l'histoire de la Quatrième République en France s'annonce comme une répétition de l'histoire de la République de Weimar. Dès lors, il ne faut pas trop s'étonner que les philosophes qui ont eu de succès en Allemagne entre les deux guerres, ont actuellement un autre succès en France. Mais c'est un développement qu'on pourrait regretter, si l'on admet l'hypothèse formulée par Bertrand Russell, qu'il y a une affinité, sinon logique, au moins psychologique, d'un côté entre l'empirisme (ou le positivisme) en philosophie et la démocratie libérale en politique, et d'un autre côté entre l'idéalisme (sous lequel il faut ici ranger l'existentialisme) en philosophie et un régime totalitaire en politique. Russell rappelle les faits que l'Eglise catholique s'inspire de la philosophie de St. Thomas d'Aquine, le gouvernement soviétique de la philosophie marxiste (qui n'est guère empiriste ou positiviste, bien qu'elle soit d'un autre point de vue matérialiste), et que le Nazisme a cru pouvoir invoquer la philosophie idéaliste allemande en sa faveur [2].

Mais, objectera-t-on, ces considérations politiques ne sont-elles pas sans portée en matière de philosophie? S'il a été prouvé que le positivisme est une philosophie insoutenable, ne faut-il pas, en tout état de cause, l'abandonner? Peut-on affermir la démocratie en l'appuyant sur une philosophie surannée? La réponse y est que le positivisme n'a pas succombé à une réfutation logique, et le fait qu'il a été abandonné par une majorité des philosophes contemporains en France et d'autres pays n'est pas une preuve de sa fausseté. On juge le positivisme insuffisant parce qu'il ne peut pas

[2] Bertrand Russell, Philosophy and Politics, Cambridge University Press, 1947, pp. 7 s.

servir de fondement pour une théorie de la valeur. Le désaccord se reduit essentiellement à un désaccord à l'égard de l'importance qu'il faut attacher à une telle théorie. M. Le Senne en dit: »Admettrait-on que la Réalité suprême est autre chose que valeur? ... Elle (la Valeur) deviendrait alors un épiphénomène, une émanation que son origine ne garantirait plus, une apparence susceptible de nous decevoir, et, en même temps que la Valeur première, toutes les valeurs seraient discréditées. Il faudrait ne plus parler de valeur du tout, ne plus rien sacrifier à la poursuite d'aucune: ce ne pourrait être que mourir.» [3] Høffding aussi, dans sa philosophie de la religion, s'est occupé du problème de la relation entre Réalité et Valeur, mais il s'est contenté de laisser la question ouverte, puisqu'il n'y a pas de moyen scientifiquement légitime pour la résoudre. Selon lui, il ne faut pas croire ce qu'on souhaite seulement parce qu'on le souhaite. Une attitude comme celle-ci est sans doute plus difficile à maintenir dans une époque de guerres et de crises économiques que dans une époque relativement stable et paisible comme la fin du XIXe siècle. Mais puisque, dans une large mesure, la propagande politique effrénée de notre époque consiste justement à assurer, sans trop de scrupules, les hommes de la vérité de ce qu'ils souhaitent, on saurait peut-être mieux résister aux allèchements de cette propagande si on s'était entrainé à une discipline intellectuelle pareille à celle qui a inspiré la philosophie de Høffding.

Ce qui est grave comme un symptôme de l'état d'esprit contemporain, c'est peut-être moins le désordre dont parle M. Delvolvé, que ce n'est le souci de vouloir à tout prix mettre fin à ce désordre par le moyen d'une théorie philosophique de la valeur.

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[3] Actes du IIIe Congrès, pp. 109 s.

REVIEWS.

Ch. Perelman, *De la Justice.* (Institut de Sociologie Solvay: Actualités Sociales: Nouvelle Série). Bruxelles 1945. 84 pp.

This small book has the great merit of trying to prevent that kind of argument about justice which makes it possible for everyone to present his own cause, whatever this may be, as the cause of absolute justice.

Such argument thrives on the fact that, in general, everybody presumes to know what justice is, wherefore nobody tries to find out what is really meant by this term when it is used by one self or by others. Actually, a number of varying meanings are attached to the term. Six of the more important meanings are distinguished by Prof. Perelman as follows: Justice may mean 1) that everybody should be treated in the same way as everybody else; 2) that everybody should be treated in accordance with his merits; 3) that everybody should be recompensed according to the value of the work he performs; 4) that consumers' goods should be distributed according to the needs of the consumers; 5) that everybody should be treated in accordance with his social rank; 6) that everybody should be treated as the law prescribes. These various concepts of justice are or may be incompatible with one another, so that what is just according to one concept is unjust according to another. Often the same person will feel that more than one of the concepts is to be included into his definition of true justice, and the logical outcome must then be a compromise, known as equity. However, equity is incompatible with what Prof. Perelman describes as formal justice, namely the principle that all persons comprised within the same essential category should be treated in the same way. Such formal justice, on the other hand, is compatible with any one of great variety of concrete rules of justice, e. g. with any one of the six rules mentioned above.

Formal justice precludes arbitrariness in the sense that one person may be treated better or worse than another, merely because of personal whims on the part of the judge. But when it comes to the question of the rules according to which formal justice is to be meted out, e. g. the question as to which of our six concepts of justice ought to be paramount,

the decision must in the last resort be arbitrary. And this appears, after all, to be true also of the view that formal justice is preferable to personal whims, although Prof. Perelman does not say so expressly.

Perhaps there is here a point where a certain ambiguity has crept into the terminology of Prof. Perelman. Whereas he makes it perfectly clear that, in his view, all concrete rules of justice must in the last resort be arbitrary (p. 73), he maintains in a different context that the definition of justice cannot be entirely arbitrary (p. 10). The explanation is that »arbitrary» in the first context (p. 73) is to be understood in an axiological sense, whereas in the second context (p. 10) it means »not determined by psychological or sociological causes». In this sense the definition of justice is *not* arbitrary, i. e. it *is* influenced by psychological or sociological causes. What Prof. Perelman will say is that most people, in their definition of justice, are consciously or unconsciously influenced by their personal interests or predilections, and this may be supposed to be the reason why many people so eagerly insist that their own definition of justice is the only true one, and that all other definitions are false. It is certainly important and meritorious to warn against such a superstitious view. But perhaps Prof. Perelman could have done so more effectively if he had adopted a terminology which allowed him to avoid the seeming contradiction between the two passages on pp. 73 and 10, to which we have referred.

Svend Ranulf.

Sven Edvard Rodhe, *Zweifel und Erkenntnis.* Über das Problem des Skeptizismus und den Begriff des Absoluten. Lunds Universitets Årsskrift. N. F. Avd. 1. Bd 44. Nr 4. Lund, 1945. 250 S.

Rodhes Buch ist ein Beitrag zur Geschichte der neuen Erkenntnisanalyse, genauer der Versuche, die Möglichkeit wahrer Erkenntnis aus Principien zu begründen, also den radikalen Skepticismus zu überwinden. Der Versuch, Erkenntnis zu begründen, führt auf die Frage nach dem unbezweifelbar wahren Ausgangspunkt und damit nach dem Wirklichen, dessen Dasein nicht bezweifelt werden kann. Diese Frage nach dem unbezweifelbar Wirklichen aber wird zur Frage nach dem Absoluten. Wie die Erkenntnisbegründung immer wieder mit Notwendigkeit auf den Begriff des Absoluten führt und wie dieser Begriff des Absoluten zuletzt immer wieder an den ihm innewohnenden Schwierigkeiten scheitert, das ist vor allem das Thema des Buches.

Was an dem Buch zunächst auffällt, ist die Einteilung und Reihenfolge

der Kapitel. Auf *Descartes* folgt *Kant*, auf Kant *Spinoza*, dann *Fichte* und endlich als Schlusskapitel *Schleiermacher*. Diese auffallende Reihenfolge hängt mit einer, genauer einer doppelten, Grundthese zusammen, die Rodhe demonstrieren will. Erstens: die Frage nach dem unbezweifelbar Gewissen führt von Anfang auf zwei Wege, einen »subjektivistischen« und einen »objektivistischen« (ontologischen), einem, der zum Bewusstsein, einem, der zum Sein an sich führt. Bei Descartes stehen beide Wege nebeneinander. Im cogito ergo sum und in den Gottesbeweisen. Aber auch (wenn ich Rodhe hier recht verstehe und in meinem Sinn interpretieren darf) im cogito ergo sum selbst. Denn das cogito »hoc et illud« führt einmal auf die unbezweifelbare Existenz der cogitationes, des Selbstgegebenen im Gegensatz zu dem durch das Selbstgegebene mittelbar Repräsentierten und Gemeinten, und zum Andern auf die unbezweifelbar gewisse Existenz der res cogitans, d. h. des »Ich», da sonst der Widersinn eines an der Existenz des Ich zweifelnden Ich entsteht. Der eine Weg führt auf die Herausschälung der reinen *Phänomene* als unbezweifelbar Existierendem und demnach als Erkenntnisgrundlage, der andere auf die *Substanzen* — der denkenden Substanz, deren Nichtexistenz einen Widersinn in sich schliesst, der unendlichen Substanz, die nichts bloss Erdachtes sein kann, der res extensa, die zwar an sich bezweifelbar ist, an deren Existenz wir aber im Hinblick auf die Wahrhaftigkeit Gottes glauben dürfen. Diese Zweiheit des subjektivistischen und objektivistischen Weges ist nun auch charakteristisch für *Kant* — allerdings beschränkt Kant die Erkennbarkeit auf die Phänomene und gründet eben auf diese Beschränkung der möglichen Erkenntnis auf die Erscheinungswelt die Widerlegung des Zweifels an aller Erkenntnis. Andererseits ist es ihm selbstverständlich, dass das — aus Form und Inhalt sich zusammensetzende — Phänomen ein An sich und zwar ein doppeltes, ein bestimmendes »Ich an sich» und ein afficierendes »Ding an sich» voraussetzt. »Zu Beginn», sagt Rodhe, »nimmt Kant das Ding an sich oder die unabhängige Wirklichkeit an und fragt, wie ihre Erkenntnis möglich ist». Aber nachdem das mögliche Erkenntnisobjekt mit der phänomenalen Welt gleichgesetzt ist, »wird der Begriff des selbständigen Dinges aufgehoben und durch den Begriff des Noumenons in negativer Bedeutung ersetzt, das dann sein positives Komplement in der Vernunftidee erhält» (S. 79). Genauer kommen zwei Vernunftsideen hier ins Spiel. Die Freiheitsidee gibt dem Ich an sich reale Bedeutung: »Im Pflichtbewusstsein, dessen Bedeutung darin liegt, dass sich das Ich als ein freies Wesen erfasst, liegt ein Selbstbewusstsein vor, das sich vom empirischen Selbstbewusstsein unterscheidet». »Das Pflichtbewusstsein ist keine phänomenale Erkenntnis, sondern ... ein rein vernünftiges Bewusstsein, das wie das reine Selbstbewusstsein über alle sinnliche Anschauung erhaben, aber doch ein Bewusstsein von etwas ganz Bestimmten, nämlich der Freiheit, ist» (S. 77). Das Ich an sich wird

nicht *erkannt*, aber doch in der Freiheitsidee *bestimmt*. Doch bleibt es nach Rodhe bei Kant nur bei einem *Ansatz*, im Freiheitsbewusstsein die Antwort auf die Frage nach dem an sich Seienden zu suchen. Wichtiger wird die Stellung der *Gottesidee*. Die »Entwicklung erreicht ihren Schlusspunkt in der Gottesidee, die nicht nur als die höchste oder einzige Vernunftsidee oder überhaupt nur als eine Idee erscheint, sondern — mit Kants Ausdruck — als der intelligible Grund der Erscheinungen» (S. 79). Der Begriff der Dinge an sich wandelt sich damit in den des Absoluten, des »undifferenzierten und unbestimmten reinen Seins» und dieser Begriff des reinen Seins verschmilzt mit dem Gottesbegriff. Dieser Begriff des Absoluten, in dem sich erkenntnistheoretische und theologische Spekulation begegnen, ist (neben dem subjektivistischen und objektivistisch-ontologischen Wege zum Absoluten) das zweite Hauptthema des eben diese Verbindung von Erkenntnistheorie und Theologie von Descartes bis Schleiermacher verfolgenden Buches.

Zunächst aber folgt *Spinoza*. »Das ontologische Princip, von Kant und Descartes angedeutet, aber nicht näher untersucht, kommt in Spinozas Philosophie zur vollen Entwicklung» (S. 85), der subjektivistische Weg zur Begründung der Erkenntnis und Ueberwindung der Skepsis, tritt hinter dem objektivistischen zurück, das Ich hinter das Absolute, das cogito ergo sum hinter den ontologischen Gottesbeweis. Im Besonderen analysiert R. eingehend den Spinozistischen Wahrheitsbegriff, seine Unterscheidung von Erfahrungs- und Vernunftserkenntnis, die Rolle des Substanzbegriffs. Der Wahrheitsbegriff Spinozas ist ontologisch: Wahrheit ist Uebereinstimmung der Idee mit dem Gegenstand, mit der Wirklichkeit; weit entschiedener als Descartes und als Kant hält Spinoza an diesem scholastisch-ontologischen Wahrheitsbegriff fest. Klarheit und Deutlichkeit ist Wahrheitskriterium, nicht Wahrheitsdefinition. Aber dies Kriterium ist untrüglich: »wer eine wahre Idee hat, der weiss zugleich, dass er eine wahre Idee hat und kann nicht an der Wahrheit der Sache zweifeln» (Ethik, 2, 43). Indessen wäre doch hier hinzuzufügen, dass im Anschluss an Descartes, aber doch über ihn hinausgehend, dies Wahrheitskriterium der Klarheit und Deutlichkeit zu dem rein logischen Kriterium der Vermeidung des Widerspruchs wird. Wahr ist eine Idee, deren Bezweiflung auf einen logischen Widerspruch führt. Erst mit dieser Logisierung des Wahrheitskriteriums — von Kant in seiner Unterscheidung analytischer und synthetischer Sätze *abgelehnt* — gewinnt der Begriff der *Substanz* seine centrale Bedeutung: »wenn Jemand sagen würde, er habe eine klare und deutliche, d. h. wahre Idee von einer Substanz und zweifle trotzdem, ob eine solche Substanz existiere, so wäre das ebenso, als würde er sagen, er habe eine wahre Idee und zweifle trotzdem, ob sie nicht falsch sei» (E. 1, 8, cor. 2). Eine nicht-existierende, damit auch eine gewordene, eine verursachte, eine

aus Teilen bestehende Substanz, eine Mehrheit von Substanzen ist ein logischer Widerspruch. Die Substanz wird zum Absoluten, zum reinen Sein.

Aber wie kommt zur Einheit die Vielheit, wie geht aus der Einheit des absoluten Seins die Vielheit der Modi hervor, wie verträgt sich auch nur das Eine mit dem Anderen? Mit Recht lehnt Rodhe die Subjektivierung der Modi ab, die mit der Grundstruktur der Spinozistischen Philosophie durchaus in Widerspruch stehende Theorie, die die Modi zu Erscheinungen des Absoluten stempelt, zu Bewusstseinsspiegelungen des Seins. Mit Recht hebt er auch hervor, dass diese Theorie nicht einmal das Problem lösen würde, da die Erscheinungen immer eine Zweiheit — von Sein und Bewusstsein, Objekt und Subjekt — voraussetzen und das Problem Einheit—Vielheit in Gestalt der Frage nach dem Woher dieser Zweiheit wiederkehrt. Stärker hätte vielleicht betont werden können, dass bei Spinoza der Satz »Alles was ist, ist entweder in sich oder in einem Andern» und »was durch ein Anderes nicht begriffen werden kann, muss durch sich selbst begriffen werden» axiomatischen Charakter trägt. Alles ist »in sich» oder »in einem Anderen», indem Substanz und Modus auf diesen logischen Gegensatz, der ein Drittes ausschliesst, diese Dichotomie aber zulässt, gebracht werden, wird die Vielheit der Modi von vornherein neben der Einzigkeit der Substanz als zulässig behandelt. Rodhe aber legt nun auch hier wieder ein Hauptgewicht auf die Identificierung des Begriffs der Substanz, des Absoluten mit dem Gottesbegriff und damit der ethisch-theologischen Spekulation. Der Gottesbegriff bringt eine Konkretisierung des abstrakten Seinsbegriffs, die Substanz wird Schöpfer und Erhalter, wenn auch in Gestalt der schöpferischen Naturkraft, der natura naturans. »Zu einer einheitlichen Anschauung vereinigt bestimmen die beiden Gesichtspunkte, der erkenntnistheoretisch-philosophische und der ethisch-theologische, sich gegenseitig. Der philosophische hat Bedeutung für den theologischen, weil er die Bedingung der Anschauung ist, dass die Erkenntnis und das Studium der Philosophie ein Weg der Erlösung ist, durch den der Mensch in Wesenseinheit mit Gott vervollkommnet wird. Die ethischen und theologischen Gesichtspunkte in Spinozas Anschauung haben dadurch für das erkenntnistheoretisch-philosophische Problem Bedeutung, dass die Auffassung, dass das Absolute Gott ist, gleichsam erklärt, was das Absolute ist und wie es sich zur Vielheit, zum Menschen und dem Erkenntnisobjekt verhält» (S. 134).

»Kann Spinozas Lehre von der Substanz als eine folgerichtige Entwicklung der objektiven Seite des Kantischen Kritizismus betrachtet werden», so kommt *Fichte* zum Absoluten über die subjektive Seite des Kritizismus, geht der Weg, den Spinoza geht, über das Ding an sich, das Absolute und die Gottesidee, so geht der andere über die Idee der Freiheit, das Subjekt und die praktische Vernunft. Genauer macht, wie Rodhe mit Recht hervorhebt, es Fichte Spinoza zum Vorwurf, dass er vom Sein,

anstatt vom Begriff des Seins, vom Sein als gewusstem Sein ausgeht — dadurch wird Spinozas Philosophie »dogmatisch» und steht vor dem unlösbaren Problem jedes Dogmatismus, zu erklären, wie aus dem Sein ein Bewusstsein, aus dem Objekt ein um das Objekt wissendes Subjekt hervorgehen kann. *Ausserdem aber* führt das Ausgehen vom objektiven Sein zur Leugnung der Freiheit — in einer nur objektiven Welt gibt es keine Freiheit; Freiheit kann es nur als Freiheit eines Subjekts geben: wer also Freiheit nicht missen *will*, muss den idealistischen Standpunkt wählen, muss das Absolute im Wissen, nicht im Sein, im Subjekt, nicht im Objekt suchen. Vom Wissen, nicht vom gewussten Objekt ausgehen aber bedeutet von dem *Akt* des Wissens und seinem *Vollzug*, von der Tat*handlung*, anstatt der Tat*sache* ausgehen. Ich ist Tätigkeit, nicht Ding; Subjekt, nicht Substanz. Mit Kant geht Fichte von der Erkenntnis, nicht vom Sein aus, aber wie Rodhe mit Recht sagt, er *analysiert* nicht die Erkenntnis, sondern er *konstruiert* sie, er baut sie auf in der Abfolge der Akte, in der sie sich vollzieht. Der erste dieser Akte, der Akt, der keinen anderen voraussetzt, ist das sich selbst setzende Ich. Das Ich aber, das sich hier selbst setzt, kann nicht das individuelle Ich, das Ich eines einzelnen Menschen unter anderen Menschen, sein, es kann nur das absolute Ich sein. Hier aber entstehen dann nach Rodhe Schwierigkeiten, die nur gelöst werden können, indem das absolute Ich aus einem Ursprung zum Ideal, einem Willensziel wird. Dieses Ziel aber ist zugleich *Gott*. »Für Fichte wird das reine Ich zum Ich als Idee, und das Ich als Idee ist eine dem individuellen Menschen gegebene Aufgabe, und es ist Gott». (S. 190) Wie für Spinoza ist für Fichte — im Unterschied zu Kant — Gott das Ziel und der Richtpunkt des sittlichen Handelns; im Unterschied zu Spinoza aber hat Gott nichts mit der Natur zu tun, sondern spricht zu uns ausschliesslich in der sittlichen Forderung, in der Stimme des Gewissens.

Erkenntnistheoretische Absolutheitsspekulation und Theologie verbinden sich auch bei *Schleiermacher*, dem, wie schon gesagt, das letzte Kapitel des Buches gewidmet ist. Der Weg von der »Dialektik» zur »Glaubenslehre» wird hier herausgearbeitet in einer Darstellung, in deren Mittelpunkt der Begriff des »Gefühls» bei Schleiermacher steht. Das »Gefühl» bei Schleiermacher ist, wie Rodhe mit Recht ausführt, kein subjektiver Zustand, es ist gegenstandserfassender »Akt», könnte man mit dem durch Husserl und Scheler wieder modern gewordenen Ausdruck sagen. Genauer: dies »Gefühl» ist zugleich Selbstbewusstsein und Gegenstandsbewusstsein, denn in ihm erleben wir uns selbst in unserer Beziehung zur Gegenstandswelt. Im Mittelpunkt steht das Gefühl der »absoluten Abhängigkeit», in dem wir unsere Abhängigkeit vom Absoluten und damit des Absolute selbst als Gottheit erleben. Theologie ist der in der Sprache der Vorstellung und des Begriffs übersetzte Ausdruck des im »Gefühl», im unmittelbaren Selbstbewusstsein Erlebten. Falsch ist von diesem

Schleiermacherschen Standpunkt aus »jede Form des Atheismus». Falsch ist jeder Versuch, die Stellung des Menschen zu bestimmen, der nicht seine Abhängigkeit von Gott berücksichtigt». Falsch ist »jede Bestimmung des menschlichen Gefühls absoluter Abhängigkeit, der dies Gefühl nicht auf Gott, sondern auf etwas Anderes bezieht.» (S. 249) Aber aus der religiösen Spekulation wird bei Sch. die Dogmatik einer positiven Religion. Falsch ist die Auffassung Spinozas, der Mensch könne aus eigner Kraft, durch wachsende Einsicht und moralisches Handeln die Gemeinschaft mit Gott, also die Erlösung gewinnen; und der gleiche verfehlte Moralismus kennzeichnet die theologischen Ansätze Fichtes, in denen er Kants Religionsphilosophie fortsetzt. Die absolute Abhängigkeit von Gott, im Gefühl uns gegeben, bedeutet für Schl. zugleich, dass die Gemeinschaft mit Gott, die Erlösung, nur durch die Gnade Gottes, von Gott her, uns zuteil werden kann.

Rodhes Buch beruht zweifellos auf einem sorgfältigen Studium der Originalwerke, dagegen ist die Literatur über Spinoza, Fichte, Schleiermacher überhaupt kaum berücksichtigt. Das lässt sich vielleicht damit verteidigen, dass es ein spezielles Thema ist, das Rodhe behandelt: das Verhältnis der erkenntnistheoretischen zur theologisch-ethischen Absolutheitsspekulation, und dass er, wenn ich ihn recht verstehe, eine spezielle These vertreten will: die These, dass die logischen Schwierigkeiten im Begriff des Absoluten zu seiner Konkretisierung im Gottesbegriff führen. Ich bekenne offen, dass mir diese These bei aller Geschicklichkeit der Begründung sowohl Spinoza wie Fichtes Erkenntnislehre nicht ganz gerecht zu werden scheint.

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Xth International Congress of Philosophy

Amsterdam.

DATE. The Congress will be opened on Wednesday, August 11, 1948. The meetings will be held on August 12, 13, 14 and 16, 17, 18.

ORGANIZATION. The plenary sessions of the Congress will be devoted to various aspects of its central theme: MAN, MANKIND AND HUMANITY.

There will be meetings of the sections as well, according to the following scheme:

I. Central theme.
II. Metaphysics and general ontology.
III. Theory of values.
V. Philosophy of science.
IV. Logic and general methodology.
VI. The age of Spinoza and Leibniz.
VII. History of philosophy.
VIII. Oriental philosophy.

PAPERS. There will be

a. Papers read in the plenary sessions, exclusively by those invited to do so (the duration is not to exceed 50 minutes).

b. Papers read in the meetings of the sections, exclusively by those invited to do so (not to exceed 30 minutes).

c. Brief communications read in the meetings of the sections, for which members can enter their names (not to exceed 20 minutes).

OFFICIAL LANGUAGES. The official languages of the Congress will be English and French, but the use of other languages, if unavoidable, is allowed.

PROCEEDINGS. Acting members will receive a copy of the Proceedings at the beginning of the Congress on separate sheets. Later they will receive a bound copy.

All papers read in the meetings and all communications will be reported in the Proceedings. THIS REPORT, WRITTEN IN ENGLISH OR FRENCH, SHOULD BE SEND IN ADVANCE BY THE SPEAKER, *in any case before December 15, 1947.*

For every report there will be only a limited space available, namely

a. For papers read in the plenary sessions, 10 pages.

b. For papers read in the meetings of the sections, 3 pages.

c. For brief communications, 2 pages.

Each page contains $43 \times 66 = 2838$ letter spaces.

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SECRETARIATE. Any papers intended for the Congress, especially application forms and reports should be addressed to the secretary

Prof. Dr E. W. BETH,

Bern. Zweerskade 23 I,

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